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Form SF298 Citation Data

Report Date *("DD MON YYYY")* 00061999	Report Type N/A	Dates Covered (from... to) *("DD MON YYYY")*

Title and Subtitle Nuclear De-Alerting and the Search for Post-Cold War Nuclear Policy	**Contract or Grant Number**
	Program Element Number
Authors Fortney, Michael E.	**Project Number**
	Task Number
	Work Unit Number
Performing Organization Name(s) and Address(es) School of Advanced Airpower Studies Air University Maxwell AFB, AL 36112	**Performing Organization Number(s)**
Sponsoring/Monitoring Agency Name(s) and Address(es)	**Monitoring Agency Acronym**
	Monitoring Agency Report Number(s)

Distribution/Availability Statement Approved for public release, distribution unlimited	
Supplementary Notes	
Abstract	
Subject Terms	

Document Classification unclassified	**Classification of SF298** unclassified
Classification of Abstract unclassified	**Limitation of Abstract** unlimited
Number of Pages 93	

NUCLEAR DE-ALERTING

AND

THE SEARCH FOR POST-COLD WAR NUCLEAR POLICY

BY

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A THESIS PRESENTED TO THE FACULTY OF THE SCHOOL OF

ADVANCED AIRPOWER STUDIES

FOR COMPLETION OF GRADUATION REQUIREMENTS

SCHOOL OF ADVANCED AIRPOWER STUDIES

AIR UNIVERSITY

MAXWELL AIR FORCE BASE, ALABAMA

JUNE 1999

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Acknowledgements

I want to thank Lieutenant Colonel Pete Hays, PhD, for his expert insight and efforts to focus this constantly transforming project. His patience and counsel salvaged this study. I also want to thank Dr. Karl Mueller for the clarity and expertise he brought to this paper. His ability to quickly spot inconsistencies in my analysis brought greater definition to this rather "fuzzy" topic.

Finally I want to thank my Lord for sustaining me through the long hours and for providing me with a wife and son who were always there when I needed them to be and conveniently absent when I needed quiet. Without their patience and understanding this project could not have been completed.

Abstract

Military and civilian leaders have understandably shifted nuclear issues to the back-burner of American national defense since the break-up of the Soviet Union nearly a decade ago. One senior United States Air Force (USAF) officer was even overheard comparing strategic nuclear weapons to the "gum stuck to the bottom of the Air Force's shoe…you just can't seem to get rid of it." While no longer the predominant defense issue, many still grapple with the strategic nuclear issue, wondering what we need to do with our "Cold War" nuclear arsenal.

One of the most recent attempts to deal with this apparent dilemma has surfaced in the debate concerning the removal of US strategic nuclear forces from their alert posture, a process now popularly known as *de-alerting*. Many feel de-alerting is, if not *the* solution, certainly a step toward solving this post-Cold War nuclear dilemma.

This study examines the de-alerting issue in an effort to see how de-alerting might contribute to United States (US) post-Cold War nuclear policy and force structure. Specifically, this study is divided into two main sections. The first portion of the study is devoted to an examination of the nuclear alert force itself. The purpose of this examination is to establish whether a decade after the end of the Cold War, nuclear alert forces have a place in the defense of the US. This first section begins by establishing that leaders have an obligation to constantly re-evaluate status quo military capabilities to determine if or when their benefits become overshadowed by their inherent costs or risks.

To make this determination for the US nuclear alert force the nature of the nuclear alert force itself is explored to determine the inherent costs or risks associated with alert forces in general.

Then, in an attempt to establish a base-line for determining under what conditions nuclear alert force utility outweighs its inherent risks, the genesis of the US nuclear alert force is examined. Here, special emphasis is placed on examining the contextual circumstances that led to the nuclear alert force's birth and maintenance in the early Cold War. Then the present day contextual environment is explored and compared to that of the Cold War period in an effort to compare and contrast similarities and differences between the two eras.

After discussing the similarities and differences in the two eras, conclusions are offered concerning whether contextual factors in the post-Cold War era still suggest a need for a nuclear alert force, despite any inherent flaws.

The second major section of the study then begins. After a brief survey of the more prominent recommended approaches to handling the post-Cold War nuclear issue, nuclear de-alerting is addressed in greater detail. Arguments for and against de-alerting are discussed with emphasis on the most prominent of the recent de-alerting proposals.

Following this detailed discussion of de-alerting, the author explores possible roles for de-alerting in two possible futures for US strategic nuclear policy.

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Chapter 1

Introduction and Definitions

Introduction

The Soviet Union and Warsaw Pact have dissolved and pieces of the Berlin Wall now sit in museums and on the mantles of military leaders, politicians, and diplomats. Russia and most of its former alliance members are struggling through democratic reformations; former Soviet-sphere states are now members of the North Atlantic Treaty Organization (NATO); Russian and American troops have served together in peacekeeping missions; the United States (US) is financing the destruction of unneeded portions of the Russian strategic nuclear arsenal, and is planning to bolster its sagging nuclear command and control/early warning infrastructure. The changes in the relationship between the US and former Soviet Union have been dramatic and undeniable. The Cold War is over.

And yet while all those changes have taken place, thousands of American and Russian nuclear weapons remain poised on strategic nuclear alert, prepared to launch against each other at a moment's notice.

Many understandably look at this situation and fail to see consistency. They wonder how the US can sponsor International Monetary Fund loans and offer billions in aid to Russia while simultaneously remaining poised to destroy the very nation whose infrastructure it is working so hard to reinforce. This policy has been labeled "schizophrenic" by many, and the perceived imbalance between threat and military posture has led many to question the need for nuclear alert forces and nuclear weapons as a whole. The collective voice of those seeking a fast, total elimination of all nuclear weapons has grown dramatically stronger since the fall of the Soviet Union. Governments, entire world regions, hundreds of private organizations, and many prominent individuals are now calling for nuclear disarmament; some even seek US unilateral disarmament.

On the other side of the issue is a group that looks past the rubble of the Berlin Wall and sees a capable, credible, modernizing Russian strategic nuclear threat possessed

by a government on the brink of economic and social collapse as well as a credible and modernizing Chinese nuclear arsenal. Faced with these conditions, talk of unilateral disarmament makes as little sense to these realists as maintaining the arsenal does to the other camp.

Another issue has surfaced in the midst of this general post-Cold War disarmament debate, the merits of which are increasingly being discussed by analysts, key national security advisors, and senior US leaders: *nuclear de-alerting*. While the idea of reducing alert force levels as systems age and threats diminish is not new, of course, the concept of wholesale removal of strategic nuclear forces from their ever-ready alert postures (de-alerting) as a response to a post-Soviet world is new and has been receiving serious consideration since the early 1990s.[1]

Why are National Security Council members, US Senators, and many academics considering de-alerting options now? Reasons vary. Some believe de-alerting is popular because it seems to allow centrists to side-step the disarmament issue while maintaining the nuclear security blanket without a robust Cold War-type force structure and posture.[2] Or as mentioned above, some may simply seek a way to bring US nuclear policy in line with what they feel is the state of the post-Soviet world. Other disarmament advocates hail nuclear de-alerting as the solution to the agonizingly slow and apparently stagnated Strategic Arms Reduction Treaty (START) process. Perhaps one of the loudest voices in the recent de-alerting debate comes from a growing group of scholars, analysts, retired military officers, and governmental leaders whose primary argument for the de-alerting of nuclear forces centers around nuclear safety. This group sees de-alerting as a way to save the US and Russia from a catastrophic accidental nuclear launch caused by what Senator Tom Daschle calls a Russian nuclear command and control system in a state of "neglect and disarray."[3]

This paper examines nuclear de-alerting from a slightly different perspective, at least initially. De-alerting proponents have written a great deal about the perceived

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[1] President George Bush's unilateral de-alerting of the Minuteman II ICBM and strategic nuclear bomber force in September 1991 occurred before significant de-alerting debate began.

[2] Bruce G. Blair, Brookings Institution, interviewed by author, 11 March 1999.

"incongruities" between US foreign and nuclear policies toward Russia, and even more concerning the deterioration of Russian strategic nuclear forces and their associated command and control structures. While any discussion of nuclear de-alerting should examine these issues (and this paper will), this study will first explore the nuclear alert force itself, its genesis and *raison d'être*. Why is it important to re-examine the nuclear alert force itself along with these other factors when discussing nuclear de-alerting? The answer is simple and perhaps so fundamental that it has either been overlooked or purposely avoided in the de-alerting debate.

All military capabilities come with drawbacks of some sort. Some systems expose friendly troops to enemy fire, many are inherently risky to handlers, and all systems siphon funds from other areas. One of the duties of leadership is to weigh the costs and benefits of each competing capability or system. If leaders perceive that the costs (fiscal, risk, etc.) outweigh the potential benefits then investment in the new capability is forgone. That same level of scrutiny is often not applied, however, to *existing* capabilities or systems. After capabilities are well ingrained into organizations and cultures, institutional inertia often results in leaders maintaining them long after the costs have arguably overtaken the benefits. Thus before discussing any current arguments supporting nuclear de-alerting, a re-examination of the nuclear alert force itself is in order.

After this discussion of the nature of the nuclear alert force, the current geopolitical environment is compared to that of the Cold War era in an effort to identify similarities and differences that may shed light on the continued need for a nuclear alert force.

Then, following a brief survey of the four principal schools of thought concerning post-Cold War nuclear policy, the arguments of the prominent de-alerting advocates are explored along with the cases made by their opponents. After this general examination of de-alerting, the discussion returns to two of the more centrist post-Cold War schools of thought (of the four previously discussed) to determine how various de-alerting options might be employed to support their goals.

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[3] Senator Thomas Daschle, "Enhancing Nuclear Security," *Congressional Record 105th Congress*, 21 September 1998, n.p.; on-line, Internet, 22 December 1998, available from: http://thomas.loc.gov/cgi-bin/query/z?r105:s21se8-98.

Key Terms Defined

Before proceeding any further, some key terms must be defined. The list that follows is obviously not intended to be an exhaustive glossary, but instead serves to clarify terms used whose meanings vary or are open to debate.

Counterforce targeting: The targeting of nuclear weapons in a warfighting environment generally falls into one of two categories, counterforce or countervalue. Counterforce targeting is the striking of the enemy's means of fighting. In the strategic nuclear context this equates to targeting an enemy's strategic nuclear systems. While the emphasis in nuclear targeting has shifted over time, US leaders first embraced the concept of counterforce strategic nuclear targeting as a means to thwart the perceived rise in Soviet air-breathing nuclear capability in the early 1950s.[4]

Countervalue targeting: As the term suggests, countervalue targeting is the striking of those objects most valued by an adversary. In the strategic nuclear context this has usually meant striking an enemy's population/industrial centers, or in other words his cities. While countervalue targeting was once seen as a necessity due to the relative inaccuracy of early strategic delivery systems, it is now most often embraced by advocates of dramatically smaller strategic nuclear arsenals who see countervalue targeting as a way to maintain deterrence (threat of unacceptable risk) with a smaller force.[5]

De-alerting: At its most fundamental level, if posturing forces for quick response constitutes alerting forces, then the de-posturing of forces to slow their response is de-alerting. While capturing the basic idea, however, this simple definition fails to express the range of meanings associated with the de-alerting debate. The term de-alerting is hard to define because the term is most often contextually defined. Instead of relying on context for clarity, this study will examine two categories of de-alerting that vary only in scope.

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[4] Walter S. Moody, *Building a Strategic Air Force* (Washington, DC: US Government Printing Office, 1996), 357.

[5] There are also those who still believe countervalue targeting is the best targeting scheme regardless of arsenal size or accuracy.

When leaders or scholars debate or discuss de-alerting as a solution to a crumbling Russian nuclear infrastructure or a policy imbalance, they typically define it as does Brookings Institution Senior Fellow Bruce Blair. When Dr. Blair speaks or writes of de-alerting, he most often defines de-alerting as being synonymous with *zero-alert*. By this he means a state in which "…no weapons are poised for immediate launch."[6] For the purposes of this study, Blair's *zero alert* term will indicate an all-inclusive, total de-alerting.

The other type of de-alerting discussed in this study is termed *partial de-alerting.* Partial de-alerting is less comprehensive. President George Bush's 1991 decision to remove US strategic bombers and the older Minuteman (MM) II Intercontinental Ballistic Missiles (ICBM) from Single Integrated Operational Plan alert while leaving other assets on alert is an example of partial de-alerting.

Deterrence: Since the debate on de-alerting is intertwined with deterrence concepts, a clear definition of deterrence is appropriate. In a 1997 study on US nuclear weapons policy, a group of National Academy of Sciences analysts explained that deterrence occurs when an action is discouraged by fear of retaliation, when the cost of pursuing the course of action is greater than the aggressor is willing to bear, or when the aggressor feels his objective(s) can not be met through a course of action based on an assessment of the situation. The authors go on to explain that core deterrence in the strategic nuclear context represents the absence of nuclear exchange based on these fears or concerns.[7] Drawing from these definitions, for the purpose of this paper, deterrence in the strategic nuclear context represents the absence of direct, open conflict between potential adversaries, including nuclear exchange at any level, based on fear of retaliation and/or a presumed denial of objectives.

Preemption: Preemption is a deliberate attack to degrade or destroy a potential enemy's offensive war-making capability before it can be unleashed. Thomas Schelling explains the dynamics of preemption in his seminal 1966 work, *Arms and Influence.* Here Schelling describes a destabilizing situation where the nature of the weapons

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[6] Bruce G. Blair, *Global Zero Alert for Nuclear Forces* (Washington, DC: The Brookings Institution, 1995), 17.

[7] John Holdren et al., *The Future of US Nuclear Weapons Policy* (Washington DC: National Academy Press, 1997), 13-15.

systems in two potential adversaries' arsenals give a perceived advantage to the side that strikes first. In a case such as this, each party might be tempted to strike first, *preemptively,* before his enemy's forces could be brought to bear.[8]

Stability: Stability exists between states when neither state possesses or seeks to possess a capability that places the other's offensive and defensive means at risk without incurring unacceptable risk on itself. In other words, situations tend to be stable when neither side believes it has the freedom to attack without the risk of incurring unacceptable damage to itself. In the strategic nuclear context then, stability is closely linked to deterrence. If as suggested earlier, deterrence is maintained by the fear of retaliation or presumed denial of objectives created by a credible retaliatory capability, then *stability* can be seen as the product of deterrence.

When discussing stability in a nuclear context, the term c*risis stability* is often used. This term is very closely associated with *stability* in general, *deterrence*, and even the previously discussed concept of *preemption.* Crisis stability describes a condition which exists during increased tensions when states are deterred from preemptive first strikes due to a fear that their preemption will not eliminate or sufficiently degrade the adversary's retaliatory capability.

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[8] Thomas Schelling, *Arms and Influence* (New Haven, Conn.: Yale University Press, 1966), 227.

Chapter 2

Alert Force Re-evaluation

Mechanized cavalry is valuable and an important adjunct but is not the main part of the cavalry and cannot be. Our [horse] cavalry is not the medieval cavalry of popular imagination but is a cavalry which is modernized and keeping pace with all developments.[9]

> *Major General John Herr*
> *Testimony before US Congress,*
> *Spring 1940*

This chapter is the first step in the re-evaluation of the nuclear alert force. After reviewing the need for military organizations to constantly evaluate existing systems, capabilities, and doctrines to ensure benefits outweigh costs/risks, the chapter addresses the nature of nuclear alert forces in general.

Why do we need to re-evaluate existing capabilities?

In all fairness to General Herr, who certainly missed the mark in his assessment of the remaining utility of the pre-WWII US horse cavalry, objective self-evaluation within the military can be extremely difficult. Stephen Rosen, in W*inning the Next War*, explains how difficult it can be for large organizations to identify the need to change or innovate. According to Rosen, as a large bureaucracy the US military is actually "designed not to change."[10] Bureaucratic inertia and procedures within the military often result in leaders maintaining status quo capabilities long after their costs and risks outweigh their benefits. Difficult as it may be to identify the need for change in the US military, the importance of recognizing the need is intuitively obvious.

Failure to recognize when the benefits of maintaining the status quo are offset by costs and risks can have catastrophic impact. A quick walk through twentieth century

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[9] Edward L. Katzenbach, Jr., "The Horse Cavalry in the Twentieth Century," in *The Use of Force: International Politics and Foreign Policy*, ed. Robert J. Art and Kenneth Waltz (Boston, MA: Little, Brown, 1971), 219.

[10] Stephen Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca, NY: Cornell University Press, 1991), 2-3.

military history reveals case upon case where a failure in evaluating existing systems, capabilities, or doctrines led to failure. Consider the failure of WW I leaders to grasp the changing relationship between the offense and defense after the development and widespread use of automatic weapons, entrenchments, and barbed wire. Or consider the subsequent French over-reliance on the defense in the face of newly mechanized and airborne offensive maneuver forces surfacing in the inter-war period. And returning to the subject of General Herr's quote which introduced this chapter, consider the fact that the US Army did not disband its horse cavalry until 1951.[11]

While the consequences of not identifying the need to change always carries at least a financial penalty (maintaining unnecessary capabilities always siphons money from other areas), in some cases failure to re-examine capabilities and make changes can lead to military disaster as in the first two examples cited above. The point is simply that certain systems or capabilities are so critical that neglecting their re-evaluation can lead to catastrophic results. The final question for this section is whether nuclear alert forces fall into this critical category.

The Nature of Nuclear Alert Forces

Much of the 1990s de-alerting debate has centered-around the instability of nuclear alert forces on "hair-trigger alert."[12] Is the instability of the nuclear alert force a new phenomenon caused by a degradation in Russian command and control/weapon systems as many suggest, or is this instability inherent to nuclear alert forces in general?

Three of the early nuclear era's most respected theorists, Thomas Schelling, Albert Wohlstetter, and Bernard Brodie, shared similar opinions on the influence of haste on nuclear forces. Schelling, in *Arms and Influence,* dedicates an entire section to "The Mischievous Influence of Haste." In this section Schelling states:

> The premium on haste…is undoubtedly the greatest piece of mischief that can be introduced into military forces, and the greatest source of danger that peace will explode into all-out war.…It is hard to imagine how

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[11] Katzenbach, 221.

[12] The term "hair-trigger alert" has become a rallying symbol for 1990s de-alerting advocates and something of an annoyance to supporters of the status quo nuclear posture.

anyone would be precipitated into full-scale war by accident, false alarm, mischief, or momentary panic, if it were not for such urgency to get in quick. If there is no decisive advantage to striking an hour sooner than the enemy and no disadvantage to striking an hour later, one can wait for better evidence of whether the war is on. But when speed is critical the victim of an accident or a false alarm is under terrible pressure to get on with the war…[13]

Schelling clearly understood the inherent instability of capabilities that place a "premium on haste."

Wohlstetter, in his classic 1959 contribution to nuclear deterrence theory, "The Delicate Balance of Terror," fully understood the instability of a nuclear command and control system dominated by the need for haste. He stated:

In order to reduce the risk of a rational act of aggression, we are being forced to undertake measures (increased alertness, dispersal, mobility) which, to a significant extent, increase the risk of an irrational or unintentional act of war…the drastic increase in the degree of readiness of these weapons, and the decrease in the time available for the decision on their use must inevitably raise the risk of accident.[14]

Finally, the "father of nuclear deterrence theory," Bernard Brodie, prophetically stated in his 1959 work, *Strategy in the Missile Age,*

Technological progress could, however, push us rapidly towards a position of almost intolerable mutual menace…each side before many years will have thousands of missiles accurately pointed at targets in the other's territory ready to be fired on a moment's notice.…Nothing which has any promise of obviating or alleviating the tensions of such situations should be overlooked.[15]

All three authors understand how destabilizing haste can be when introduced into the nuclear equation. Schelling discusses how the need to respond quickly places a "terrible pressure" upon leaders to initiate hostilities first. Wohlstetter similarly warns that "drastic increases" in readiness decrease leaders' decision making time which carries a greater risk of accident. And Brodie predicts how technology will result in robust forces ready to be launched "on a moment's notice," creating what he calls a "position of almost intolerable mutual menace." Clearly all three authors appreciate the instability inherent

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[13] Schelling, 227.

[14] Albert Wohlstetter, "The Delicate Balance of Terror," *Foreign Affairs* 37, no. 2 (January 1959): 231.

[15] Bernard Brodie, *Strategy in the Missile Age* (Princeton, NJ: Princeton University Press, 1959), 304.

in a military force or capability whose successful employment hinges on the speed in which it can be brought to bear.

This does not imply, however, that since nuclear alert forces are inherently unstable they should necessarily be eliminated. Fielding means of war always brings some inherent risk to the owner and nuclear alert forces are no different.

Even the crudest primitive sword bore some inherent risk to its bearer. The critical calculation that the bearer of the sword made was, regardless whether that sword could hurt him if handled incorrectly, the benefit of carrying that sword into battle far outweighed his concerns over its inherent risk. It is for this reason that framers of the early nuclear force concepts of both the Soviet Union and US still relied on fast-reacting nuclear alert forces when faced with the inherent instability of the system. To them, the cost or risk was outweighed by the benefit.

To conclude this chapter, what is vital to remember is that the bearer of the sword in the analogy above must constantly re-evaluate the costs and benefits of carrying that sword into battle. He must always be on guard for changes to his environment that alter one side of the cost/benefit equation. As situations change, the inherent risk of carrying that sword may outweigh any benefit it grants.

This chapter has offered evidence to suggest that nuclear alert forces are inherently risky to maintain and that leaders must constantly re-evaluate their capabilities to ensure that a capability's benefit has not been overtaken by its risk. The next chapter begins to re-evaluate the status quo nuclear alert force by exploring the contextual factors that led early Cold Warriors to believe the benefits of a nuclear alert force outweighed the costs or risks involved. The study will then compare and contrast this Cold War environment with that of the post-Cold War era.

Chapter 3

The Cold War Nuclear Alert Force

This chapter describes the contextual circumstances leading to the development of the US nuclear alert force. Specifically, what led US leaders to believe that the benefits of a nuclear alert force outweighed the inherent risks discussed in the previous chapter? The chapter will close with a discussion of the appropriateness of this US response to the Cold War threat.

Cold War Threat and US Response

The US enjoyed a nuclear monopoly in the early post-World War II (WWII) years. While US leaders knew the Soviet Union was earnestly developing its own atomic capability, no threat had yet emerged that demanded a quick reacting alert force. Even in this environment, however, US leaders saw a need for their nuclear forces to respond promptly to threats. Consider NSC-30, *United States Policy on Atomic Weapons.* This 1948 policy statement was the US's first formally enunciated policy on atomic warfare. While NSC-30 left many nuclear issues unresolved, it did address the need for a prompt response with US nuclear forces.[16]

> It is recognized that, in the event of hostilities, the National Military Establishment must be ready to utilize promptly and effectively all appropriate means available, including atomic weapons…[17]

Although "prompt" by 1948 standards did not approach the quick reaction times of today and clearly NSC-30's drafters were not yet thinking of robust alert forces, but a "prompt" US response would soon be redefined.

The US nuclear monopoly ended in August 1949 with the Soviet Union's first detonation of an atomic device. Following the test, US leaders began increasing their emphasis on rapid reaction. Until the Soviet entry into the nuclear arena, Strategic Air

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[16] David Alan Rosenberg, "The Origins of Overkill: Nuclear Weapons and American Strategy, 1945-1960," *International Security* 7, no. 4 (Spring 1983): 13.

[17] Thomas H. Etzold and John L. Gaddis, eds., *Containment, Documents on American Policy and Strategy, 1945-1950* (New York, NY: Columbia University Press, 1978), 343.

Command's (SAC) forces felt little time constraint in conducting their nuclear mission. According to General Curtis LeMay in testimony before Congress in 1953, prior to the Soviet atomic demonstration, SAC was confident in its ability to "go about leisurely destroying their [Soviet] war potential." But now, General LeMay continued, "we must go back to the rulebook [and] as quickly as possible destroy their capability of doing damage to us."[18]

LeMay's simple statement captured two important emerging directions for US nuclear policy. The advent of a Soviet offensive nuclear capability introduced the need to respond quickly before enemy weapons could be brought to bear on US interests and second, instead of simply targeting Soviet "war potential" SAC was now concerned with Soviet offensive nuclear systems as well.

This change in pace brought about by the 1949 Soviet atomic test was actually codified in NSC-68, *United States Objectives and Programs for National Security.* Paul Nitze, the key framer of NSC-68, explains that in the wake of the Soviets' recent atomic test and their increasing conventional might, one of the goals of NSC-68 was to "strengthen our strategic forces to present a more credible deterrent of aggression."[19] Within the document itself, Nitze very clearly describes both the source and nature of this "aggression." NSC-68 described the Soviet threat as "widening the gap between its preparedness for war and the unpreparedness of the free world."[20] Nitze and his fellow drafters of NSC-68 understood the implications of the Soviet build-up and nuclear capability.

> The military advantages of landing the first blow become increasingly important with modern weapons, and this is a fact which requires us to be on the alert in order to strike with our full weight as soon as we are attacked, and if possible, before the Soviet blow is actually delivered.[21]

US leaders saw a Soviet Union arming itself with nuclear offensive weapons which would soon give it the ability to attack strategic targets and weapons in the US. In

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[18] Scott D. Sagan, *Moving Targets* (Princeton, NJ: Princeton University Press, 1989), 21.

[19] Paul H. Nitze, *From Hiroshima to Glasnost-At the Center of Decision, A Memoir* (New York, NY: Grove Weidenfeld, 1989), 106.

[20] Gaddis, 409.

[21] Ibid., 432.

addition, evidence seems to suggest that those same leaders saw that one necessary response to this threat was a rapid reaction capability.

However, in the late 1940s and 1950s the US nuclear arsenal had only a very limited ability to maintain any sort of alert force. In the immediate aftermath of the 1949 Soviet nuclear demonstration and for several years to follow, to meet this emerging need for fast reaction, US military leaders simply relied on what this paper will call *point alerting*, a temporarily increased level of readiness based on a particular emerging threat. The first such nuclear point alert was actually declared prior to the Soviet nuclear demonstration in response to the Berlin Blockade in 1948. During this time, two non-nuclear B-29 squadrons were flown to Great Britain in a possible display of US nuclear resolve and "the rest of the SAC force was placed on 24-hour alert."[22]

Several other point alerts occurred in the following years, and while some leaders were already contemplating a more robust alerting plan, in the early days of the Cold War, assets and infrastructure simply could not support it.[23] For example at the time of the Berlin Blockade the US military did not have physical control of the nuclear weapons themselves (the Atomic Energy Commission (AEC) maintained control per presidential instructions), only one unit of thirty-two nuclear-capable B-29s was available, and only fifty unassembled weapons existed, each of which required forty men two days to assemble.[24] Clearly a robust, continuous alert force was not sustainable during these early years, but things would change.

Several events occurred in 1949 that would affect the strategic nuclear alert posture of the US for decades to come. First, in May USAF Lieutenant General H. R. Harmon presented the results of a report commissioned by the Secretary of Defense and Joint Chiefs of Staff concerning the adequacy of US strategic nuclear capabilities. The Harmon Report, while controversial in its timing (as the new USAF was fighting for an

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[22] The B-29s ordered to Europe were not modified to carry atomic weapons. Opinions differ as to Truman's intent in deploying these aircraft. Some believe the deployment was an effort to rattle the nuclear saber while others believe the Soviets knew these particular aircraft were not nuclear capable. J.C. Hopkins and Sheldon A. Goldberg, *The Development of Strategic Air Command 1946-1986 (The Fortieth Anniversary History)* (Offutt, AFB, NE: Headquarters Strategic Air Command, Office of the Historian), 14. Richard K. Betts, *Nuclear Blackmail and Nuclear Balance* (Washington DC: Brookings Institution, 1987), 24-29. Sagan, 15.

[23] Betts, 32.

[24] Betts, 28. Sagan, 17.

increased budget share), found the US nuclear arsenal to be woefully insufficient. The report claimed that US nuclear forces could neither meet the expressed US strategic goal of eliminating the Soviet war-making ability co-located in urban areas nor protect allies from a Soviet advance in Europe.[25]

Second, as discussed above, was the detonation of the first Soviet atomic weapon. This added another entire target category to the list of requirements, counterforce target. And as the target base expanded, weapons stockpiles needed to grow accordingly.

Finally, probably as a result of these events and President Truman's growing realization that he would never achieve his goal of a United Nations-sponsored international body controlling all nuclear weapons, the President abandoned his stance on limiting nuclear expansion. In the summer of 1949 Truman declared, "Since we can't obtain international control we must be strongest in atomic weapons."[26]

Thus the Harmon Report, the Soviet atomic detonation, and President Truman's resignation to a large arsenal led to a rapid build-up in US nuclear capabilities. And the build-up was dramatic. From the 133 weapons the US military planned around at the time of the Harmon Report in 1949, the arsenal grew to nearly 18,000 by the end of the 1950s.[27] This rapid increase in numbers of weapons would support a more robust alert force. However, the scares of 1949 and numerical sufficiency still did not lead to immediate widespread alerting of US nuclear forces. That would come near the end of the 1950s.

While President Truman gave the US nuclear force its initial numerical boost, it was the Eisenhower administration that instituted changes that greatly decreased SAC response time. Almost immediately upon entering office Eisenhower began to release the AEC's hold on nuclear weapons, placing weapons in the hands of the military.[28] In addition, during the early years of his administration various studies and threat appraisals, including those of the Net Evaluation Subcommittee, the Technological Capabilities

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[25] Rosenberg, 15-16. Sagan 18. Gaddis, 360-364.

[26] Rosenberg, 22-23.

[27] Sagan, 19. Rosenberg, 16.

[28] By 1961 approximately 90 percent of all US nuclear weapons were under military control. Rosenberg, 27.

Panel (TCP), and the so called Gaither Committee, began to question our readiness to deal with the rapidly expanding Soviet nuclear threat.

In addition to maintaining required numerical strength, in order to ensure that US forces were not vulnerable to surprise attack from the growing nuclear threat, the Eisenhower Administration took steps to "bring US force structures more into line with a policy of instant nuclear response."[29] Early warning systems were completed and steps were taken within the USAF to ensure, as the TCP recommended, that "the bombers were enroute to their targets before any attack arrived."[30]

The Soviet threat clearly drove SAC to pursue faster response times. SAC began a one-third ground alert program on 1 October 1957.[31] This program involved placing one-third of SAC's strategic bomber force on 24-hour alert with crews standing by and all weapons loaded. While official SAC historians credit the command's leadership not only with the ground alert concept but also with identifying the need for the program, Paul Nitze and Fred Kaplan suggest the ground alert program was actually a presidential response to the l957 Gaither Report which identified key vulnerabilities in SAC's forces.[32] Regardless of the conceptual originator, both the Gaither report and SAC's own history indicate that the increased vulnerabilities of the SAC alert force to the increased Soviet nuclear threat mandated the ground alert program to ensure US force survivability.

Thus the SAC alert force was born, its *raison d'être* being the threat of surprise destruction by Soviet nuclear forces. As the SAC bomber alert force grew in the mid to late 1950s, serious discussion began concerning the utility of and need for both ground launched intercontinental ballistic missiles (ICBM) and submarine launched ballistic missiles (SLBM) to augment the SAC bomber alert capability.

Missile development had been going on in the US since WW II. However, until the successful demonstration of the significantly more powerful thermonuclear weapon in

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[29] Ibid., 41.

[30] Ibid., 39.

[31] Hopkins and Goldberg, 69.

[32] While the Gaither Committee coalesced in spring of 1957, its report did not go to the president until November. Since SAC was already conducting some preliminary tests of the concept in November 1956, it seems SAC may have already been developing the concept prior to Gaither's influence. Also note that Albert Wohlstetter of RAND had already reported similar SAC vulnerabilities in his early 1950s R-290 report. SAC leaders had been exposed to R-290. Ibid., 65. Nitze, 169. Fred Kaplan, *The Wizards of Armageddon* (New York, NY: Simon and Schuster, 1983), 152.

late 1952, the ballistic missile could not carry a weapon with a great enough yield to make such programs cost effective.[33]

Given this technological green light in 1952 and still under pressure to respond to the perceived Soviet missile threat, key advisors, panels, and committees counseled the President to move quickly in developing a missile capability. President Eisenhower responded by making missile development the highest national priority in 1955.[34]

These efforts produced results in less than half a decade. The US's first ICBM, an Atlas D, was declared on-alert in October, 1959 and in November of the following year, the *USS George Washington* strategic missile submarine (SSBN) left port armed with sixteen Polaris missiles for its first nuclear patrol.[35] These ICBM and SLBM forces joined the already on-alert strategic bomber force to complete what would become known as the US's strategic nuclear triad. And these final two legs of this triad brought unique dimensions to the nuclear alert force.

The ICBM of course brought much greater striking speed to the alert force. Moments after launch authorities ordered an execution, launch directives would arrive in the hands of missile crews who would configure their sorties for launch and execute. Approximately 30 minutes later, the warheads would arrive at their destination. While greatly enhancing the US's ability to get forces off the ground quickly, ICBMs were still not invulnerable to enemy counterforce strikes.[36] It is in this area of vulnerability or survivability that the third leg of the triad, the SLBM, added another unique operational dimension to the alert force.

While the SSBN's response time was slower than that of the ICBM (based primarily on communications constraints), what it contributed to the alert force was near invulnerability to preemptive attack. According to the US Navy in the late 1950s, this

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[33] Norman Polmar, *Strategic Weapons: An Introduction* (New York, NY: Crane, Russak and Company, 1982), 20-21.

[34] The Strategic Missiles Evaluation Committee, the Technologies Capability Panel, and the Rand Corporation all supported the development of the ballistic missile. President Eisenhower, while completely supporting the effort maintained reservations about the need for great numbers of missiles. Rosenberg, 44-45.

[35] Bill Yenne, *SAC, A Primer of Modern Strategic Airpower* (Novato, CA: Presidio Press, 1985), 81. Rosenberg, 66.

made the SSBN/SLBM combination the ultimate deterrent and the anchor of the nation's deterrent force.[37]

Thus, by the early 1960s US leaders had developed a robust three-dimensional alert force comprised of highly flexible strategic bombers, rapidly executable ICBMs, and relatively invulnerable SLBMs. This triad represented a valuable mix of capabilities for alert force planners as they responded to the Soviet threat.

For the purposes of this study, further historical weapon-by-weapon, capability-by-capability break-out of alert milestones is unnecessary. It suffices to say that after the triad was established, as new capabilities were developed, whether new weapon systems or force enablers such as airborne refueling and improved command and control, they were quickly assimilated into the nation's alert force network with the objective of increasing the nuclear alert force's potency while shortening its response time.[38]

Before concluding this review of the evolution of the nuclear alert force from its earliest days to the solidification of the triad, it would be beneficial to briefly discuss the policy governing the US nuclear alert force to discover how US leaders envisioned its use.

US Nuclear Response Policy

The US's policy on how it would respond under direct nuclear threat or attack has changed significantly over the years, evolving from a fairly straightforward stance in the early Cold War years (pre-ICBM) to more ambiguous policies later.

In the early Cold War years, the US plan for nuclear response was simple and clear. A 1945 Joint Chiefs of Staff (JCS) post-WWII strategic concept declared the US must be ready "to strike the first blow if necessary…when it becomes evident that the

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[36] ICBMs were vulnerable in that they were static, easy to locate and target. This does not suggest that targeting accuracy in the early years of the ICBM was such that individual hardened missile sites could be eliminated with confidence.

[37] Rosenberg, 52-53.

[38] For a complete chronological, weapon by weapon breakout of the SAC alert force, see *Alert Operations and the Strategic Air Command—1957-1991* (Offutt AFB, NE:Headquarters SAC, Office of the Historian, 1991).

forces of aggression are being arrayed against us." A later JCS evaluation board defined "acts of aggression" to include "the readying of atomic weapons against us."[39] This early policy suggesting a pre-emptive, first-strike stance based on strategic warning was further codified in NSC-68 which declared "The military advantage of landing the first blow...requires us to be on alert in order to strike with our full weight as soon as we are attacked, and, if possible, before the Soviet blow is actually delivered."[40]

It is important to remember that in the early years the strategic bomber-based US nuclear force enjoyed an environment where attack warning, even that of a surprise attack, was measured by the Central Intelligence Agency in "days or even weeks."[41] This theoretically allowed national leaders to confer with advisors and even Congressional leaders prior to launching nuclear strikes. So while this early policy might be to initiate an attack when enemy aggression was imminent, the great amount of advanced warning that leaders expected and the ability to recall a bomber fleet en route made this policy tenable.[42] In addition, as Lawrence Freedman points out in his work, *The Evolution of Nuclear Strategy,* while many in leadership positions declared the US would launch in self defense when the threat was imminent, no one ever defined just what constituted an imminent threat, and as we know this was never put to the test.[43]

As technology advanced and the ballistic missile replaced the manned bomber as the greatest first-strike threat to the US, the strategic environment changed dramatically. As mentioned above, the Eisenhower administration responded quickly to the changed nature of the threat by greatly expanding the US early warning system. While vitally important, when faced with the new ballistic missile technology these improvements still only provided tactical warning measured in minutes. This lack of warning changed the nature of the "when to launch" decision.

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[39] Rosenberg, 17.

[40] Gaddis, 432.

[41] Rosenberg, 34.

[42] SAC implemented the Positive Control Launch (PCL) program in 1958. This program allowed SAC leaders to launch the SAC bomber alert force during times of increased tension. When launched these forces would proceed along their pre-planned strike routes until recalled. Ibid., 49.

[43] Lawrence Freedman, *The Evolution of Nuclear Strategy,* 2d ed. (New York, NY: St. Martin's Press, 1989), 127.

While the nature of bomber warning response procedures did not change appreciably in the missile era (still relying primarily on alerting and the positive control launch system), US leaders were now faced with a different kind of dilemma. Should missile alert forces be launched upon receipt of tactical warning of incoming weapons (launch on warning) or should launch be withheld until the enemy weapons impacted the US (launch under attack)? US policy in this area has never been crystal clear.

Since all three legs of the strategic triad have been on nuclear alert, no administration has officially embraced a launch-on-warning stance for its ballistic missile fleet, and it is questionable whether the US has ever officially adopted a launch-under-attack policy either.[44] What the US has consistently proclaimed throughout most of the later Cold War years is that it intends to strike *back*, not first in a nuclear exchange. The later Eisenhower policy of *massive retaliation* (suggesting a retaliatory second strike) was followed by the Kennedy/McNamara rejection of a "full first strike capability."[45] This proclaimed policy survived through many administrations and remains the US's official stance today.

But does this policy *preclude* the US from launching on warning or under attack? Consider the statement made by Defense Secretary Harold Brown in 1977: "the question is, would you launch land-based missiles before explosion of nuclear weapons on the United States?…it is not our doctrine to do so—neither is it our doctrine that under no circumstances would we ever do so."[46]

What this indicates is that US leaders have probably left this issue intentionally somewhat murky. As Richard Betts points out in work, *Surprise Attack: Lessons for Defense Planning*, deterrence can often be preserved by a degree of uncertainty introduced into the situation.[47] As Stephen Cimbala points out, the possibility the US

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[44] Stephen J. Cimbala, *Nuclear War and Nuclear Strategy: Unfinished Business* (New York, NY: Greenwood Press, 1987), 28-29. John M. Collins, *US-Soviet Military Balance: Concepts and Capabilities 1960-1980* (New York, NY: McGraw-Hill, 1980), 128-129.

[45] Rosenberg, 68.

[46] Secretary Brown, quoted in Collins, 129.

[47] Richard K. Betts, *Surprise Attack: Lessons for Defense Planning* (Washington, DC: The Brookings Institution, 1982), 240.

might launch under attack or even on warning "could not be precluded by prudent Kremlin planners."[48]

So while the bomber alert force in the early Cold War years was NSC-68's blunt, predictable instrument of possible preemption based on threat of attack, the triad-based alert force of the later years was markedly different. While still maintaining its alert readiness, US leaders probably purposely left the actual conditions under which it would be executed slightly vague to bolster its deterrent value.

Thus far this chapter has simply documented that from the moment the Soviets first gained an atomic capability and a perceived ability to hold US assets at risk, the US began efforts to ensure that its nuclear forces would not be caught on the ground. The next chapter of this paper will explore current contextual circumstances in an attempt to determine if the same factors that drove US leaders in the early Cold War era to pursue an alert force still exist today

Before proceeding to that question and chapter, however, another question must be answered: "Was the alerting of forces the *correct* response to the perceived threat during the Cold War?" Why is this important to address? Simply, if alerting was an incorrect response to the threat during the Cold War, then finding an analogous post-Cold War threat would not sufficiently demonstrate a need for a nuclear alert force today.

Was there an alternative?

As discussed in the previous chapter of this paper, some of the most respected minds in the area of nuclear theory and doctrine recognized the dangers introduced into military decision making processes when the speed of the response alone can determine victory or defeat. At the same time, however, they seemed to understand the *need* for speed to help ensure survivability and establish a credible deterrent.

Consider Albert Wohlstetter's comments in his work, "The Delicate Balance of Terror." Wohlstetter communicates clearly what has become a fundamental principle of deterrence theory, that presenting the potential adversary with an opposing force capable

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[48] Cimbala, 123.

of retaliating regardless of an enemy first strike is key to deterring aggression.[49] If the key to maintaining deterrence then is ensuring a credible retaliatory capability, what can states do to make their retaliatory capability credible? Wohlstetter suggests there are three means to enhance the survivability of retaliatory forces: *hardening*, *dispersal*, and *fast force reactions*.

Could either of Wohlstetter's other methods for enhancing survivability (other than fast reaction) sufficiently guarantee survivability on its own? The bomber and land-based ICBM legs of the triad are briefly examined below to determine if either hardening or dispersal could have guaranteed a retaliatory capability without increasing alert levels.[50]

Consider the strategic bomber. Would hardening or dispersal alone guarantee the survival of a bomber retaliatory capability? First, hardening alone would certainly be insufficient to guarantee the survivability of both aircraft and the related support infrastructure. While it might be possible to base strategic bombers under enough layers of concrete and steel to protect them from some near-miss weapons effects, affording similar protection to the air base infrastructure supporting the aircraft is certainly not feasible.

Of course dispersal of aircraft during crisis has long been a consideration for the protection of bomber assets. Large-scale, prolonged dispersal plans have inherent problems, however. Most of these center around the impact that prolonged dispersion has on readiness. For readiness not to be affected at dispersal locations, leaders must simulate home-base support conditions as closely as possible. To support a large strategic bomber force this means virtually duplicating the robust nuclear and logistical support infrastructure at the dispersal location. This is not only costly but counterproductive, since such well-equipped dispersal locations would become easily identifiable prime targets to an adversary.[51]

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[49] Wohlstetter, 219.

[50] The effects of dispersion and hardening on the third leg of the triad, the SLBM, will not be examined in this section since the on-patrol SSBN is hardened and dispersed by its very nature.

[51] Of course the vulnerability of assets at dispersal locations assumes that the adversary has sufficient weapons to hold these facilities at risk. The "bomber gap" and "missile gap" scares of the 1950s and 60s certainly inflated the Soviet arsenal sizes in the minds of the West. That said, even if western leaders had known that Soviet weapons totals were incapable of destroying all US alert assets at all dispersed locations,

Turning to the ICBM, would hardening or dispersal alone guarantee the survival of the ICBM's retaliatory capability? The US began hardening its ICBM fleet beginning with the later first generation Titan and Minuteman systems in the early 1960s. Unfortunately, by that time technological advances were already making these hardening measures inadequate.[52] The technology supporting the placement of multiple re-entry vehicles (MRV) on single ballistic missiles was already well advanced when first generation ICBMs went on alert. This MRV technology was employed on an operational, on-alert missile system in 1964 when the US Navy's Polaris A-3 SLBM became operational.[53] Land-based ICBM MRV capability was just around the corner for the US, and the Soviets were already testing a MRV capability in 1968.[54]

MRV technology allowed multiple warheads from a single missile to be targeted against a single hardened missile facility. Counterforce equations of the day suggested that 500 Soviet ICBMs (with three MRVs each) with a reliability of 80 percent and a single warhead yield of five megatons (estimated yield of the Soviet SS-9 at the time) could destroy almost all US land-based ICBMs.[55] Obviously, this MRV technology did not allow the US to rely solely on hardening to preserve its ICBM fleet; other means to ensure a retaliatory capability had to be employed.

In the face of an increase in missile numbers and the already discussed MRV technology of the 1960s, the other of Wohlstetter's alternatives to fast-reaction, dispersion, also loses its saliency as a means to protect ICBMs. Mobility, however, is one form of dispersion that could potentially mitigate the MRV threat to ICBMs. Mobile ICBM concepts have existed for decades and began receiving greater attention in the US in the late 1960s as ICBM accuracy and MRV capabilities increased.[56] While many agreed that mobile systems could offset the impact of increased accuracy and the MRV

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that would not guarantee that Soviet totals would not later rise to levels where they *could* hold all US airfields (both day-to-day and dispersal locations) at risk. After all, a state with a demonstrated capability to produce modern thermonuclear weapons and delivery systems could presumably produce them faster and cheaper than an adversary could construct suitable dispersal airfields.

[52] Polmar, 45.

[53] Ibid., 53.

[54] Ibid., 59.

[55] Ibid., 59-61.

[56] Ibid., 95-96.

threat, funding constraints and debates over basing schemes prevented the US from ever fielding a mobile ICBM system.[57] Mobility then, while a promising form of dispersion, was never seriously pursued in the US. In addition, as the US currently has no plans to develop or even explore new mobile ICBM systems, mobility will probably not substitute for fast reaction alert ICBM forces in the foreseeable future.

So was there an alternative to pursuing a fast reacting alert force early in the Cold War? The difficulties in hardening and long-term dispersal of nuclear-equipped aircraft and the impact of MRV technology on the ICBM fleet suggest that US leaders' pursuit of speed was an unavoidable and necessary step to ensure survivability of the US strategic nuclear force.

Having concluded in this chapter that alert forces were born of the need to respond to a specific nuclear threat based on a fundamental of deterrence theory which mandates survivability in order to deter, the next step is to compare the post-Cold War world with that of the Cold War. Are there significant differences in the climate and threat that would allow the US to conclude that nuclear alert forces are no longer necessary in the post-Cold War world?

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[57] Sagan, 94-5. Polmar, 97-101.

Chapter 4

The Post-Cold War Nuclear Threat

This chapter outlines the potential post-Cold War strategic nuclear threats to US interests and then compares these threats to those which drove the US development of and reliance on the nuclear alert force during the Cold War. In order to limit the scope of the following discussion, states with a "virtual" nuclear capability (possessing needed technology and know-how to produce a weapon in very short time), a very limited nuclear capability (Pakistan and India), and traditionally allied nuclear-capable states (France, Great Britain, and Israel) will not be addressed. These constraints predictably narrow the list to two potential threats, Russia and the PRC.

The Current Threats

Russia

While several unilateral and bilateral initiatives, including force reductions, detargeting, and the Nunn-Lugar Cooperative Threat Reduction (CTR) program have reduced tensions between the US and Russia, Russian strategic nuclear forces remain formidable and appear to be modernizing. While sources disagree slightly as to the numbers of Russian weapons and associated launchers deployed, Russian strategic launchers (total ICBMs, SLBMs, and strategic bombers) number between 1,400 and 1,500 with a total deployed warhead count between 7,500 and 8,000. These numbers reflect Russian moves to meet START I (Strategic Arms Reduction Treaty) treaty limits. START II, signed in 1993 but not yet ratified by the Russian Duma, would reduce warhead totals to 3,000 to 3,500.[58]

In addition, despite significant, highly publicized conventional military draw-downs, Russian strategic nuclear forces continue to modernize. For example, less than a week after the Russian Duma announced another delay in considering START II because of the

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[58] Other sources place current deployed warhead counts at slightly lower figures, but fall between the 7000-8000 range. Rodney Jones, et al., Carnegie Foundation For International Peace (untitled), 1996, n.p.;

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December 1998 US and British bombing in Iraq, Russian officials announced the deployment of a new ICBM. The first group of ten new SS-27 TOPOL-M ICBMs have been deployed to an area southeast of Moscow, with ten more planned for deployment in 1999 and thirty more per year between 2000 and 2003.[59] While the close timing of these two events does not indicate that the move to activate this new system was tied to US and British activities in Iraq (the SS-27 had been under development and testing for years), it does indicate that Moscow and Washington still fundamentally disagree about many things, Russian leaders are still willing to air those disagreements in the world press, and most significantly, that Russian strategic nuclear force improvements have not ceased.[60]

Paul Podvig, a researcher at the Center for Arms Control at the Moscow Institute of Physics and Technology, recently confirmed other major force improvements underway in Russia. In addition to deploying the TOPOL-M, the Russian military continues efforts to extend the life of its current strategic systems (ICBM life extension programs), is developing a new SLBM (although the missile is experiencing problems in testing), and began work in 1996 on the first unit of its follow-on to the *Typhoon*-class SSBN, the *Yuri Dolgorukii*.[61]

There are two prevailing views concerning the sustainability of the Russian modernization effort. First there are many in the West who believe Russian nuclear modernization will probably continue. They cite several reasons.[62] In the decade since the break-up of the Soviet Union, western leaders and analysts have watched a dramatic decrease in Russian conventional force capabilities and a simultaneous increase in

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on-line, Internet, 26 January 1998, available from http://www.ceip.org/pubstr96.htm. "Rocket Union," *Jane's Defence Weekly*, 10 February 1999, 25. Holdren et al., 34.

[59] David Hoffman, "Russian Parliament Delays Work on START II Treaty," *Washington Post,* 23 December 1998, A-16. David Hoffman, "Russia Set To Deploy Topol-M Missiles," *Washington Post*, 27 December 1998, A-23. "Rocket Union," *Jane's Defence Weekly*, 10 February 1999, 26.

[60] In some respects, the deployment of the TOPOL-M is actually stabilizing. First, the TOPOL-M is START II compliant (single warhead). In addition, as Russian systems degrade and are forced from the inventory, some are worried that Russian nuclear weapon numbers will fall below a threshold guaranteeing Wohlstetter's "delicate balance of terror."

[61] Minutes of the Future of Russian-US Strategic Arms Reductions: START III and Beyond, Joint Russian/US Conference, (comments by Paul Podvig) conducted in Cambridge Massachusetts, 2-6 February 1998 (minutes posted in June 1998), n.p.; on-line, Internet, 6 March 1999, available from http://blue.iris.mipt.ru/lat/transforming/summary.htm.

[62] Dean A. Wilkening, "The Future of Russia's Strategic Nuclear Force," *Survival* 40, no. 3 (Autumn 1998): 89-111.

Russian declaratory reliance on its nuclear "umbrella." This reliance on nuclear capabilities during a conventional drought is reminiscent of the US policy during the fiscally constrained Eisenhower administration and seems to have caught few analysts by surprise.[63] In addition, many expected this increased Russian dependence on its nuclear arsenal not only for defense but as a means to bolster its claim to superpower status. Evidence of this shift was first seen in Russia's reversal of its "no first use" pledge in 1993 and has since been reinforced by statements of several Russian leaders. Pragmatic Russian leaders cite US post-Cold War efforts to expand NATO and a new American interest in national ballistic missile defense as reasons to maintain robust nuclear arsenals even during the mounting fiscal crisis. [64]

On the other side of the debate, many see the deployment of the TOPOL-M and other moves as the last gasps of a dying nuclear giant. This camp cites the Russian economic collapse and resultant dearth of military funding and concludes that Russian leadership will have no choice but to forego continued modernization and probably forego maintenance on existing systems as these nuclear systems reach the limits of their operational life. [65]

People's Republic of China

PRC leaders are cultivating closer ties with the US while simultaneously restructuring the PRC military support infrastructure and modernizing its strategic forces.[66]

Current PRC strategic capabilities remain small, however, and are structured around a concept of "limited deterrence." Limited deterrence is a concept recently embraced by the Chinese after a reexamination of their nuclear doctrine which sees nuclear weapons

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[63] Ibid., 89-111.

[64] Barbara Starr, "NATO Growth Increases Russian Nuclear Threat," *Jane's Defence Weekly*, 17 December 1997, 4. CLW Education Fund Report on Russian Obstacles to Disarmament, n.p.; on-line, Internet, 14 February 1999, available from http://www.clw.org/pub/clw/ef/deadlock/russobs.html.

[65] Blair, interview.

[66] "The Changing Face of China," *Jane's Defence Weekly*, 16 December 1998, 21-28.

not only as a deterrent force against both nuclear and conventional attack, but also as weapons of war to be used to control escalation during an intrawar period.[67]

Obtaining exact force levels for the PRC is difficult. As a Defense Intelligence Agency report noted in the late 1980s, information concerning Chinese strategic nuclear capability is "extremely limited and difficult to verify."[68] With that said, different unclassified sources over the last few years estimate the PRC total strategic warhead inventory at somewhere between 149 and 375 strategic nuclear warheads.[69] ICBM and SLBM numbers are also estimated to be very low. Analysts suggest ICBMs total somewhere between 20 to 24 and SLBMs near 12.[70]

In addition, despite the PRC's moves in recent years towards better relations with the US, it too continues a broad range of strategic modernization efforts. Specifically, the PRC is currently designing and testing new SLBMs and SSBNs, mobile ICBMs, intermediate range ballistic missiles, and air launched cruise missiles (ALCM).[71]

These advances, among others, are part of a Chinese modernization program which includes advertised annual defense budget increases of 20 to 30 percent in 1999.[72] While Chinese officials have been careful lately to preserve cordial relations with the US, these spending increases and defense investments reflect a determined effort to at least modernize and maintain the limited strategic capability China now possesses.[73]

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[67] Alastair I. Johnston, "China's New, Old Thinking," *International Security*, vol. 20, iss. 3, (Winter 1995): 12.

[68] Defense Intelligence Agency Report/China Intelligence Update (untitled), 1988, n.p.; on-line, Internet, 4 February 1998, available from http://www.fas.org/irp/dia/product/index.html.

[69] National Resources Defense Council/Arms Control Association/International Institute for Strategic Studies (untitled), 1997, n.p.; on-line, Internet, 26 January 1998, available from http://www.clw.org/pub/clw/ef/nukes97.html. Paulsen, 110. Johnson, 31.

[70] Jane's Sentinel—Russia and the CIS (Surrey, UK: Jane's Information Group Ltd., 1998) Para 1.10.4.

[71] Ibid., 1.10.4. "The Changing Face of China," 15. "Offensive Weapons, China, People's Republic," *Jane's Strategic Weapons Systems* 28, n.p.; on-line, Internet, 15 February 1999, available from http://fore.thomson.com/janes/templates/eu/uifrmwrk/psuser_frmwrk.htm.

[72] Some sources indicate that Chinese defense expenditures are actually 200-500 percent higher than published figures. "The Changing Face of China," 22.

[73] Ibid., 22.

Comparing the Threats

There are both stark differences and clear similarities between the nuclear threats faced by the US in the Cold War and Post-Cold War periods.

Differences

Perhaps the greatest single difference in the two eras is the reduced tension between the actors. This reduced tension is largely the result of a diminished ideological conflict with Russia and much stronger economic ties between the US and both Russia and the PRC.

Economically, the US is second only to Japan in overall trade with the PRC and is the third largest foreign investor in the PRC itself. US/PRC economic interaction has clearly been increasing and promises to continue doing so.[74] The economic interdependence between the US and Russia is decidedly more complex, based on initiatives to bolster the ailing Russian economy and support its nuclear infrastructure, but much like in the PRC, the US is second only to Germany in overall trade with Russia. In addition, while foreign investment has remained somewhat low due to political instability, the US also ranks second in foreign investment to Russia.[75]

Clearly, the political atmosphere and level of interdependence has greatly reduced tensions between the former Cold War era adversaries. At the same time, however, some reasons for concern still exist.

Similarities

While encouraged by the easing of tensions on the political front, a cautious observer might view the emerging international system less than optimistically. Despite the growing interdependence between the US and Russia, several factors are hard to ignore. The still robust strategic nuclear force, a Russian Duma where communist party members still outnumber the next closest rival almost three to one, a country on the verge of

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[74] Jane's Sentinel—China and Northeast Asia (Surrey, UK: Jane's Information Group Ltd., 1998), Para 1.17.9. *Europa World Yearbook* vol. II (Surrey, UK: The Gresham Press, 1998), 902-3.

[75] Jane's Sentinel—Russia and the CIS, Para 8.17.12. *Europa World Yearbook* vol. II, 2850-51.

economic collapse, and a once reform-minded, now unpredictable president in jeopardy all suggest there are still reasons for caution.[76]

And while the situation in the PRC appears much more stable than that in Russia, the modernizing nuclear force is still maintained by an avowedly communist government that has shown little hesitation to challenge US interests in the region. The PRC's provocative missile launches and naval activity during the 1996 national elections in Taiwan, the early 1999 threats to discourage US missile defense aid for regional allies, the much-publicized alleged theft of US nuclear weapons (W-88 warhead) design information, and the hostile reaction following the accidental NATO bombing of the Chinese embassy in Belgrade are evidence of this willingness to challenge US interests. Clearly the potential for instability between the US and Russia and/or the PRC still exists.

Revisiting the Initial Question

This study has thus far suggested that while nuclear alert forces are inherently dangerous, the need for a credible retaliatory deterrent capability during the Cold War overshadowed this instability. It has also been noted that existing military capabilities, especially those that inherently contribute to instability, must be routinely re-examined to ensure that unnecessary systems or capabilities are not maintained when no longer needed.

In an effort to determine whether the existing nuclear alert force is still worth maintaining, the contextual factors that led to its development and maintenance during the Cold War were listed, as well as the factors that characterize the present-day threats. The final question to answer, then, is whether the nature of the post-Cold War threat shares enough of the original Cold War alert force contextual drivers to suggest that a nuclear alert force might still be necessary.

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[76] Jane's Sentinel—Russia and the CIS, Para 8.7.7.

Interim Conclusion

As Wohlstetter, Brodie, and Schelling all agreed, the need for haste in nuclear decision making is as unsettling as it is inevitable when potential enemy forces are poised to strike with little time to respond. While the current political climate is significantly less tense than that during the Cold War era due to the factors discussed above, the fact remains that the governments of our former Cold War era foes are potentially combative and/or unstable, and still maintain strategic nuclear forces capable of decisively striking or even destroying the US.

Thus based on the nature and stability of the potential foes and the still robust level of strategic threat, a fast retaliatory nuclear capability of some sort appears to still be warranted.

Does this mean the US must revert to a Cold War force structure and doctrine? No. Clearly, the post-Cold War world is strikingly different from its Cold War ancestor and US force structure and doctrine should reflect that. Does this mean that the concept of nuclear de-alerting cannot be discussed as long as other nations maintain robust nuclear arsenals? Again no. The concept of taking inherently unstable weapons off of hair trigger alert makes sense as long as their removal from alert in some way *adds* stability to the system rather than creating less stability by removing a fundamental prerequisite of deterrence, a credible retaliatory capability.

The core issue remaining to be discussed in this paper is what options are available to US leaders as they face this new era and for the purposes of this study, how might nuclear de-alerting play a role?

Chapter 5

Post-Cold War Options

After the initial shock from the collapse of the Soviet Union subsided, many military and civilian leaders and defense scholars began to wonder what place there was, if any, for the large nuclear arsenals that for so many decades arguably kept the Cold War from turning hot. While there are many variations on the following themes and although there is a great deal of overlap among their ideas, in this study the current schools of thought are grouped into four camps.

For the purposes of this paper, the first camp is entitled the *nuclear superiority* camp. Those belonging to this camp believe that "more is better," even in the nuclear arena. The second camp is a *status quo*-type camp, whose hopes for nuclear stability still rest primarily on the arms control regimes that currently exist. Third, is the *minimalist* camp whose members contend that dramatically reduced arsenals (perhaps into the low hundreds of weapons) would be sufficient to maintain deterrence. Fourth is the *disarmament* camp, whose proponents argue that the time is right for total nuclear disarmament.

The following discussion not only includes a general description of each camp, but also briefly addresses reduction strategies or methodologies as well as desired end-strengths. To clarify, the reduction methodologies simply describe how each camp approaches the following issues: the perceived need to maintain *parity* between parties during the reduction process, whether reductions must be *bilateral or* can be *unilateral*, the camp's requirement for *verifiability,* and the *speed* at which the camp may proceed. This information will be used later in the paper to help match possible de-alerting mechanisms to the more pragmatic of the camps discussed below.

The Nuclear Superiority Camp General Description

Some on the far right of the nuclear debate still claim membership in the nuclear superiority camp, but their numbers are few due to the early Cold War flavor of their message. Proponents of nuclear superiority believe "that the nation should depend, not

on revenge, but on the capacity and will to fight back if attacked [and] the best, although not the only conceivable posture for fighting back effectively, is military superiority."[77] Superiority advocates claim history supports the idea that superior forces not only win conflicts, but serve as a deterrent as well (using conventional warfighting models to support their arguments as well as an analogy from the early Cold War era when clearly superior US forces appeared to deter aggression).[78]

While one could debate the superiority camp's interpretation of history and their assumption that superiority in nuclear weapons conveys the same advantage it does in the conventional arena, this camp can be dismissed as a serious policy option due to its blatant incompatibility with the expressed US goal of reducing nuclear weapons strengths, not enhancing or maintaining superior levels. This will be explored in more detail later in this chapter.

Reduction Methodologies and End Strength

Since the superiority camp seeks to maintain or create nuclear superiority, a discussion of its reduction methodology is of course not applicable. In addition, as this camp's ultimate numerical goal is relative to the number of weapons belonging to an adversary, a specific numerical goal cannot be presented. Simply stated, this camp desires more weapons than the potential opponent.

The Status Quo-type Camp

General Description

Broadly speaking, a proponent of the status quo-type camp feels the best way to reduce strategic nuclear force levels is through a robust system of negotiated, verifiable, bilateral agreements, much like the system governing actions between the US and Soviet Union/Russia since the first of the arms limitation agreements during the Cold War. For

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[77] David W. Tarr, *Nuclear Deterrence and International Security, Alternative Nuclear Regimes* (White Plains, NY: Longmont Publishing Group, 1991), 112.

[78] Ibid., 104.

the purposes of this description of the "status quo-type camp," current US/Russian policies and mechanisms will serve as a "living model."

The Nuclear Posture Review (NPR), the Secretary of Defense's nuclear follow-up to the conventional Bottom-Up Review, was completed in September 1994 and provided the US with a post-Cold War nuclear roadmap extending to the year 2003.[79] While the NPR dealt with a wide range of nuclear issues (policy, doctrine, force structure, command and control, operations, infrastructure, safety, security, and arms control),[80] for the purposes of this study it is sufficient to look only at the overall direction for US nuclear policy outlined in the NPR, as this captures the approach of the status quo camp.

According to then-Defense Secretary William Perry, NPR participants had the difficult task of suggesting a force structure and policy direction that balanced a desire to further reduce forces with the need to hedge against the possibility of a Russian return to a hostile state or inability to drawdown at a rate comparable with that of the US.[81] The recommendations of the NPR have been described as a "lead and hedge" strategy. In this strategy the US would seek to maintain a force structure still based on a triad, robust enough to serve as a hedge while simultaneously seeking to lead in reduction efforts. In addition the NPR identified the need to maintain the national nuclear support infrastructure to ensure "that [the US] could reconstitute our forces as the decade went along, if we needed to."[82]

While to its critics this "lead and hedge" strategy is decidedly weighted towards the "hedge" side, the drafters of the NPR sought from the beginning to ensure that their intentions toward reduction were well known. Deputy Secretary of Defense John Deutch expressed at the Defense Department's NPR "coming-out" briefing what became a regularly chanted disclaimer: "I want to emphasize that this force structure permits options for deeper reductions to accelerate both the implementation of START II and to go to even larger and more far-reaching reductions, should the political circumstances

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[79] Department of Defense News Release Number 541-94 (Washington, DC: Office of Assistant Secretary of Defense [Public Affairs], 22 September 1994), 5.

[80] Department of Defense News Release Number 535-94 (Washington, DC: Office of Assistant Secretary of Defense [Public Affairs], 20 September 1994), 1.

[81] Ibid., 2.

[82] Remarks of Secretary Perry as quoted in Department of Defense News Release 541-94, 3.

warrant."[83]   In addition, the NPR solidly supported continued involvement in the Nunn-Lugar Cooperative Threat Reduction (CTR) program established in 1991, again demonstrating a desire to move the force reduction process along.

In addition to the NPR, another major policy decision with bearing on status quo US nuclear policy and force structure was reached in November 1997 with the signing of Presidential Decision Directive-60 (PDD-60).   PDD-60 is the first broad change to official US nuclear doctrine since the Reagan "prevailing policy" of 1981.   PDD-60 was a result of expressed concerns from the former Chairman of the Joint Chiefs of Staff and the Commander in Chief, US Strategic Command (CINC USSTRATCOM) who realized that the doctrine that underwrote deterrence during the Cold War and the resultant targeting strategy could no longer be supported with current force levels.[84]   The administration's response to this doctrine-force structure mismatch was to reexamine the Cold War doctrine.   According to Robert G. Bell, special assistant to the President and National Security Council Senior Director for Defense Policy, this PDD removes all references to prevailing in a nuclear war and changes the role of US nuclear weapons to that of "deterring nuclear wars or the use of nuclear weapons at any level, not fighting [with] them."[85]   This marks a significant departure for official US policy.

This status quo policy is primarily expressed through the formal negotiation process and is linked to the current Strategic Arms Reduction Talk (START) regime as it was linked to START's predecessor, the Strategic Arms Limitations Talks (SALT).   Since the status quo is so committed to these inspection regimes, any description of the status quo camp would be incomplete without a brief review of these treaties' purpose and status.

Formal nuclear arms control treaty regimes began with SALT which, as the name suggests, sought not to reduce strategic weapon totals, but simply to *limit* further deployment.   It wasn't until START I went into force in late 1994 that the US and Russia actually had a working framework established to reduce deployed strategic weapons counts.

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[83] Department of Defense News Release Number 546-94 (Washington, DC: Office of Assistant Secretary of Defense [Public Affairs], 22 September 1994), 8.

[84] Steven L. Meyers, "U.S. 'Updates' Nuclear War Guidelines," *New York Times*, 8 December 1997, 4.

[85] R. Jeffrey Smith, "Clinton Directive Changes Strategy On Nuclear Arms," *Washington Post*, 7 December 1997, 1.

Among other cuts, under START I the US is to reduce its ICBM force to 550 (from 1000 in 1990), cut its SLBM force to 432 (from 568 in 1990), reduce its SSBN count to 18 (from 31 in 1990), and cut heavy bomber totals to 97 (from 324 in 1990). The US has already met most of its START I milestones and sees no difficulty in meeting the December 2001 deadline for total compliance.[86]

START II, ratified by the US Senate in January 1996, has not yet entered into force. It has been held up by the Russian Duma's failure to consider or ratify the treaty.[87] Among other actions, by banning heavy and MIRVed ICBMs, START II requires the US to deactivate all 50 Peacekeeper ICBMs, reduce to one the number of warheads on each Minuteman III ICBM, remove four additional SSBNs from the inventory, and significantly reduce SLBM warhead counts and the B-52's ALCM carrying capacity.[88] The US is currently budgeting to maintain its forces at START I levels with a plan to implement START II quickly if it is ratified by the Duma. The deadline for compliance with START II (if ratified) is December 2007 (extended from January 2003 at the request of President Yeltsin).[89]

No START III treaty exists, but it was discussed by Presidents Yeltsin and Clinton in Helsinki in 1997. The leaders agreed in principle to proceed quickly with START III as soon as START II is ratified by the Duma. Tentative discussions indicate START III would reduce total deployed warheads to an aggregate limit of between 2,000 and 2,500 for each country.[90]

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[86] Department of Defense, *Annual Report to the President and the Congress 1998* (Washington, D.C.: Office of the Secretary of Defense, 1998), 59.

[87] The future of START II is uncertain. While some still cling to the hope that the Duma will ratify START II, as Bruce Blair notes, the Russian Duma has "linked" so many issues to their consideration/passing of START II that it is doubtful it will ever be ratified. Based on his contacts in Russia, Blair suggests that the Duma is in no hurry to ratify START II and is content to use the treaty's future as a political tool. (Blair, interview). Others like General Habiger still had much confidence in START II's viability (at least in 1998) based-on his contacts with senior Russian military officials (Generals Sergeyev and Yakovlev) who had expressed to General Habiger that Russian systems are "running out of service life (and) are just getting old." General Habiger explains that these military leaders have expressed numerous times to an understanding Duma that regardless of whether START II is ratified, Russian systems will be deactivated anyway based on the expiration of service life. General Eugene B. Habiger, transcript of oral interview by Defense Writers' Group, 31 March 1998, n.p.; on-line, Internet, 22 December 1998, available from www.fas.org/news/usa/1998/03/980331-dwg.htm.

[88] Department of Defense, *Annual Report to the President and the Congress: 1999*, 67-69.

[89] Ibid., 67-69.

[90] Ibid., 67.

The status quo camp has employed the use of two other programs to help satisfy other emerging post-Cold War needs, the CTR program (also known as Nunn-Lugar) and the plan for shared early warning (SEW).

As mentioned above, the CTR program began in 1991 with an overall mission to "help secure former Soviet weapons of mass destruction."[91] US leaders feared not only a failure of the former Soviet Union to meet its treaty obligations under START, but also the proliferation of weapons of mass destruction in the turmoil surrounding the collapse of the Soviet Union. As such the CTR program began with five broad objectives, including the goal of aiding Russia to meets its treaty reduction goals and offering assistance to enable nuclear-equipped former Soviet states to return all former Soviet nuclear weapons to Russia.

While there have been suggestions that not all CTR funds have been spent as intended, the program has been credited with significantly contributing to the purging of nuclear weapons from all non-Russian Soviet successor states and with being instrumental in accelerating Russian weapons destruction in accordance with START I.[92] As of the end of 1998 the US Congress has voted to provide $2.3 billion to support CTR efforts and has obligated $1.9 billion of that amount. CTR has strong support and evidence suggests that the program will continue for the foreseeable future.[93]

SEW is another status quo initiative intended to help solve another of the post-Cold War dilemmas. As discussed in much greater detail later in this paper, Russian command and control and early warning systems are in a state of disrepair. Many suggest this disrepair creates instability by reducing Russian leaders' confidence in the ability of their systems to provide adequate warning. This in turn leads to pressure to make quicker decisions which in turn has led to a Russian launch-on-warning doctrine.

To help relieve this pressure, the US has embarked on a program to share early warning information from its space-based surveillance assets with Russia. The decision to supply Russia with this early warning information came from a Joint Statement on the

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[91] Office of the Secretary of Defense CTR Web Page, n.p.; on-line, Internet, 14 March 1999, available from http://www.ctr.osd.mil.

[92] Ibid.

[93] Ibid.

Exchange of Information on Missile Launches and Early Warning signed by Presidents Yeltsin and Clinton in Moscow in September 1998.[94]

The SEW program has been in existence for some time; however, the Russia-specific program is still in its infancy. While no hardware or facilities have yet been acquired, the goal of the Russian SEW program is to provide the Russians with the capability to receive US launch detection information. This information will be provided to a Joint Warning Center (JWC), slated to be built in Moscow and manned by Russian and American personnel.[95]

The Russian portion of the SEW program is far from progressing smoothly. The original "political deadline" for the construction of the Moscow JWC site is November 1999, but there is little hope of this deadline being met. As an interim solution, a Year 2000 (Y2K) Warning Center is slated for completion by November 1999. This site, located in the US, will allow Russian personnel to monitor US launch activity from US surveillance systems during the end of 1999. In addition this Y2K site will eventually serve as the training facility for the JWC facility.[96]

In addition to problems caused by these delays, recent political events seem to have placed the entire Russian SEW program in jeopardy. In April 1999, in protest over US involvement in the operations in Kosovo and Yugoslavia, Russian leaders postponed all talks on SEW. SEW program coordinators advise that the Russian protest in no way affects plans to stand-up the Y2K warning center in November 1999. They do suggest, however, that this break-off of communications will adversely impact the negotiations for the development of the permanent JWC facility already plagued with deadline problems.[97]

Critics of the status quo claim that the window for progress in arms reductions may only be open for a short time and that the status quo arms control paradigm is too slow to capitalize on this unique opportunity, even as augmented by programs such as CTR and

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[94] Joint Statement on the Exchange of Information on Missile Launches and Early Warning, Moscow Summit, 2 September 1998.

[95] Mr. R. Rosenbalm, HQUSAF/XORBR, interviewed by author, 12 March 1999.

[96] Ibid.

[97] Mr. R. Rosenbalm, HQUSAF/XORBR, telephonically interviewed by author, 27 April 1999.

SEW. These critics believe that the risks and costs associated with maintaining the nuclear arsenal and the possible closing of the window of opportunity requires the US to move quickly, perhaps unilaterally, and outside existing negotiated boundaries.

Reduction Methodologies and End Strength

Methodologies. Perhaps the phrase "slow and steady" best captures the overall methodology espoused by most in the status quo camp. As Major General Thomas Neary, Commander, Twentieth Air Force and former USAF Director, Nuclear and Counterproliferation suggests, it is imperative for US leaders to "stay within the lanes" when it comes to making nuclear policy and force structure changes. As the previous discussion of status quo programs indicates, the status quo's mechanisms keep them well within the lanes. This camp's reliance on robust arms control regimes whose tenets demand balanced reductions indicate their desire to maintain *parity* during drawdowns. To status quo proponents this parity creates an equilibrium that is necessary for deterrence and stability.[98] As such, status quo-type systems generally seek *bilateral* cuts. While some unilateral initiatives have taken place within the current status quo arms control environment (such as the Bush initiatives of the early 1990s), these moves still left the US with parity in overall capabilities and in no way supplanted ongoing bi-lateral processes.

Flowing naturally from a reliance on bilateral systems that desire parity is the status quo's need for substantive *verification* measures to enhance stability in the system by ensuring that arsenal balances are maintained. The final methodological characteristic of the status quo camp is the relative lack of *speed* inherent in this system. Many status quo proponents feel, as General Neary implied above, that too much speed is not good and that stability is enhanced by pursuing cuts, in what General Gene Habiger, prior CINC USSTRATCOM, calls a "rational, verifiable manner."[99]

End Strengths. Based on the US's commitment to the indefinitely extended 1968 Nuclear Non-proliferation Treaty, the status quo camp necessarily defaults to an ultimate

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[98] Tarr, 91-92.

[99] General Eugene B. Habiger, transcript of oral interview by Defense Writers' Group, 31 March 1998, n.p.; on-line, Internet, 22 December 1998, available from www.fas.org/news/usa/1998/03/980331-dwg.htm.

goal of eliminating nuclear weapons. That said, most status quo proponents do not see this happening any time soon. This does not mean that they necessarily feel that elimination is a bad goal (although some do), but is simply a reflection of their pragmatic, deliberate approach to reductions. As mentioned earlier in this section, as Deputy Secretary of Defense Deutch has stated in discussions surrounding the NPR, the administration is prepared to entertain "larger and more far-reaching reductions [than START II], should the political circumstances warrant."[100] Also as mentioned earlier, preliminary START III talks are already underway and numbers in the 2,000 to 2,500 range have surfaced. For the status quo camp, then, the desired end strength is flexible, based on the ability to draw-down in concert with other parties.

The Minimal Deterrence Camp

General Description

The thought of maintaining deterrence with a limited number of weapons is not new. Minimalist deterrence has been debated for decades and is the model adopted by the PRC, Great Britain, and France. Minimalist deterrence advocates contend that the potential terror inflicted upon cities and industrial complexes (countervalue targeting) by even a small number (usually in the hundreds of weapons) of nuclear weapons could still serve as a credible deterrent to a potential attacker.[101] Proponents of minimalist deterrence concepts (some of whom also embrace de-alerting programs) support their

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[100] Department of Defense News Release Number 546-94.

[101] What this paper has grouped into the minimalist camp is often separated by other authors. Minimalists often share philosophical views with marginalists. Marginalism is the endeavoring to downplay the utility of nuclear forces. This is most often communicated by statements such as "nuclear weapons now exist only as a deterrent to other nuclear weapons." A marginalist philosophy would naturally result in dramatically lower weapons totals and is thus grouped into the minimalist camp for this discussion. In addition, some feel the minimalist deterrent camp loses its identity when weapon numbers shrink into the low hundreds. At this point some feel deterrence is no longer a tangible result of a robust destructive force, but a "virtual deterrence." This author suggests that all deterrence is "virtual" as no one can prove the existence of or effectiveness of deterrence with any number of weapons. Thus, this author sees no utility in breaking-out separate categories beneath or alongside the minimalist camp based on a slight philosophical differentiation (with marginalists) or based on an ill-defined concept such as "virtual deterrence."

claims with the help of studies that reflect the dramatic impact of even a small nuclear strike on an industrialized nation. For instance Stansfield Turner cites a 1987 Massachusetts Institute of Technology study in which computer simulation predicted that 239 nuclear weapons targeted against key strategically important targets (industrial concentrations collocated with urban areas), would result in the decimation of the US gross national product and the deaths of sixty percent of the population within two years of the detonations. Mr. Turner called this level of destruction the "point of non-recovery" and asserted that, like the US, Russia also has its points of vulnerability that if struck with 250 similar warheads, would also pass the point of non-recovery.[102] Similarly, the National Academy of Sciences' 1997 study, *The Future of US Nuclear Weapons Policy,* cites a study that estimates that 20 submarine-launched W-88 475-kiloton warheads detonated over Russia's 12 largest cities would kill one sixth of the Russian population from blast and thermal effects alone (total death tolls would be much larger) and destroy one quarter of Russia's industry.[103]

To those subscribing to minimalist deterrence concepts, studies such as these reinforce their claims that small numbers of strategic nuclear weapons will guarantee deterrence, which they see as the *raison d'être* of the US strategic nuclear arsenal.

Minimalists are not without opposition however. George Quester suggests two major arguments against a minimalist strategy. First and most importantly, he argues that very small numbers of strategic nuclear forces can lead to crisis instability. This, he says, is due to the possibility of an adversary believing he could destroy enough of an opponent's small arsenal (if not all of it) in an offensive strike, perhaps enhanced or encouraged by a technological breakthrough. Additionally, Quester recognizes the moral and political dilemma created by a minimalist strategy.[104] While some disagree, to Quester this dilemma is unavoidable as minimalist states would be forced to embrace and declare a population-centered, countervalue targeting stance.[105]

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[102] Stansfield Turner, *Caging the Nuclear Genie* (Boulder, CO: Westview Press, 1997), 35-37.

[103] Holdren, et al., 43.

[104] George H. Quester, "The Continuing Debate on Minimal Deterrence," in *The Absolute Weapon Revisited*, eds. T.V. Paul, et al. (Ann Arbor, MI: University of Michigan Press, 1998), 172-3.

[105] While most seem to agree with Quester's assumption that minimalist force levels mandate a shift to countervalue targeting, some disagree. Bruce Blair believes that even small numbers of nuclear weapons targeted against military and counterforce targets have a deterrent value based on a general aversion to the

Reduction Methodologies and End Strength

Methodologies. David Tarr suggests that according to pure minimalist rationale, *parity* in a drawdown is not necessary. This is due to the fact that minimalists firmly believe that deterrence and stability are maintained by a finite number of weapons and not the size of the arsenal relative to an adversary's.[106] It naturally follows that if parity is not important to the minimalist, then a *unilateral* drawdown to that finite number is acceptable. Even in an environment of unilateral force reductions, however, *verification* of the minimalist state's remaining arsenal could still be important. For the finite force to be credible in the eyes of those the minimalist seeks to influence, it must be verifiably potent. Finally, concerning the *speed* of the drawdown, assuming the minimalist leader has taken the necessary steps to convince those he is intending to deter that his smaller force is credible (that his forces are sufficient and that he possesses the will to use them), then the pace of the reduction process could be brisk.

End Strength. While minimalists all might agree that there is a finite number of weapons sufficient for deterrence, they do not all agree on what that number is. As mentioned earlier, Stansfield Turner believes sufficiency lies in a low number, somewhere near 250 warheads. Others claiming to be members of the minimalist camp seek stability in numbers as high as 2,000. Most in this camp, however, are somewhere in between, "usually in the hundreds rather than thousands."[107]

The Nuclear Disarmament Camp

General Description

Describing the tenets of the nuclear disarmament camp is deceptively difficult. At first glance, those advocating total nuclear disarmament would seem to occupy the most extreme position in the post-Cold War nuclear debate (from a superiority or status

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use of nuclear weapons and the level of destruction a nation would still experience even if the targets were military in nature. Blair, interview.

[106] Tarr, 127.

[107] Ibid., 127.

quo perspective). Looking a bit deeper, however, one begins to see that all the factions mentioned thus far (with the exception of the *superiority camp*) at least claim to share the same ultimate objective of nuclear disarmament. As mentioned earlier, even the status quo camp, whose perceived slow movement is criticized by members of other camps, is officially committed to the indefinitely-extended Non-Proliferation Treaty of 1968 which requires states to seek nuclear reductions with the ultimate goal of elimination. In trying to fix the position of the disarmament camp, then, one must ignore these professed ultimate desired ends and instead concentrate on the means; it is here where the disarmament camp separates from the pack.

Lawrence Freedman contends that the disarmament camp has recently been re-energized. He suggests it was inactive for several years following the break-up of the Soviet Union and was awakened by France's series of nuclear tests in 1995.[108] This move by France in the face of staunch opposition, the Russian's earlier (1993) retraction of their "no first use" pledge, and the 1998 nuclear detonations by India and Pakistan signaled to the world that nuclear weapons were not marginalized Cold War relics, but were still perceived by some as viable instruments of national defense

This new energy resulted in various private commissions, groups, and prominent individuals speaking more loudly about the need to disarm. Trying to fix the disarmament position is not an easy task, not least because certain individuals arguably in the disarmament camp belong to different groups, academies, and commissions whose published positions on disarmament vary.[109] What all disarmament camp members seem to share, however, is a general dissatisfaction with the speed at which governments are reducing nuclear force levels and threats. While specific proposals are as numerous as think-tanks, two recent proposals standout because of the status of their originators and the amount of attention given to them in recent years.

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[108] Lawrence Freedman, "Nuclear weapons: From Marginalisation to Elimination?" *Survival* 39, (Spring 1997): 184-189.

[109] An example of the varied views of disarmament proponents might be the case of General (retired) G. Lee Butler. General Butler belongs to several organizations whose positions do not always coincide. For instance he is affiliated with the National Academy of Sciences and contributed to their 1997 report *The Future of US Nuclear Weapons Policy*. This report advocates an eventual disarmament (actually referred to as "prohibition") but carefully considers the tremendous contextual hurdles to be cleared to get there. Other commissions and groups that General Butler has collaborated with seem more inclined toward

The National Academy of Sciences (NAS) 1997 study *The Future of US Nuclear Weapons Policy* recommends several policy actions aimed at minimizing the importance of nuclear weapons, strengthening current regimes, and then rapidly reducing the numbers of weapons using established arms control regimes as a vehicle. The NAS also recommends concurrently running a progressive de-alerting program. The Academy's end game, nuclear "prohibition," would come later and would admittedly be difficult to achieve.[110]

The Australian-sponsored Canberra Commission report on the elimination of nuclear weapons calls for much more than an initial marginalization of nuclear weapons, but an agreement by the five major nuclear weapon states "to commit themselves unequivocally to the elimination of nuclear weapons and agree to start work immediately on the practical steps and negotiations required for its achievement."[111] The Canberra Commission report recommends an immediate de-alerting of nuclear forces and a much faster reduction of forces than the NAS recommendation.[112]

The tenets of the disarmament camp, as embodied in the NAS and Canberra Commission, could be summarized as follows. First, nuclear states must make bold statements to express to the world their intent to marginalize or eliminate completely all nuclear weapons. Second, states should de-alert nuclear forces while more permanent removal processes are ongoing. And third, states must move much faster in weapons reduction than status quo regimes currently allow. While these three tenets do not capture every variation on the disarmament theme, they probably capture its spirit.

Of course the disarmament camp also has its critics. One such critic, Charles Glaser, also observed the post-Cold War resurgence in nuclear disarmament issues and cautions that nuclear disarmament may not be the panacea it is touted to be.[113] In addition to the obvious political and verification-related walls to be scaled, Glaser suggests that the very

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disarmament advocacy, stating the US should disarm quickly and unilaterally but not providing a great deal in the way of policy to effect this kind of solution.

[110] Holdren, et al., 2-10, 62-63, 67-72, 75-83, 85-95.

[111] Canberra Commission on the Elimination of Nuclear Weapons, *Introduction Statement,* n.p.; on-line, Internet, 23 February 1999, available from http://www.dfat.gov.au/dfat/cc/cc_report_exec.html.

[112] Ibid.

[113] Charles L. Glaser, "The Flawed Case for Nuclear Disarmament," *Survival* 40, iss. 1, (Spring 1998): 112-128.

goals disarmament is meant to achieve are not feasible. First, against the claim that disarmament will make nuclear war less likely between states, Glaser suggests that inevitable conflict could lead to re-armament which would foster a race to re-arm (since, of course, disarmament does not equal dis-invention). In Glaser's mind, this nuclear full-court press is far more destabilizing than the status quo. Glaser uses similar logic to explain that disarmament will not make the risk of accidental or unauthorized launch disappear. Again in a re-armament race, Glaser explains that the current routinely practiced controls and procedures would be absent, making accidental or unauthorized launch more likely. Finally, Glaser convincingly argues that while disarmament proponents claim nuclear disarmament would reduce the *chance* of nuclear proliferation, he claims the *dangers* of proliferation would be greatly magnified. He suggests in a disarmed world, any state covertly developing a nuclear capability would suddenly have all of the control a nuclear monopoly affords.[114]

In addition, while not disagreeing with Glaser's argument for the increased risk involved with proliferation in a disarmed world, it is also quite possible that the underlying premise, that proliferation will be less likely in a disarmed world is, also suspect. Why? In a disarmed world the benefit of obtaining a nuclear capability might prove irresistible to a rogue state. This could conceivably lead to more states seeking a nuclear capability, increasing proliferation instead of decreasing it.

Reduction Methodologies and End Strength

Methodologies. Discerning the preferred reduction methodologies for the disarmament camp is as difficult as determining its tenets, again due to the many different approaches to disarmament being espoused. While there are some fringe disarmament elements who advocate otherwise, most serious disarmament proposals seek to maintain some semblance of *parity* during drawdown. Both the NAS and Canberra Commission reports mentioned earlier espouse coordinated efforts in drawing down forces and even Helen Caldicott, a vocal peace activist and disarmament proponent, seems to recognize a need for parity in the reduction process.[115] Similarly, while some

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[114] Ibid., 112-128.

[115] Tarr, 151.

groups advocate unilateral disarmament actions, most generally suggest a *bilateral* approach.[116] Along with a need to proceed primarily on a bilateral basis, the most prominent recent disarmament proposals include means to *verify* during the drawdown process and after disarmament is completed.[117] Finally, most disarmament groups are dissatisfied with the slowness of the current regimes and seek a greater *speed* in the process.

End Strength. The nuclear disarmer's goal is, of course, zero. This does not indicate, however, that all disarmament advocates believe this will be easy or even possible. The NAS study cited above pragmatically recognizes the difficulties involved in going to zero. The study recognizes not only the elaborate verification mechanisms needed, but the unprecedented transparency that would be required and the ever-present possibility for states to cheat as well.[118]

This concludes the survey of the post-Cold War options or camps. Table 1 summarizes the reduction methodologies and end strengths of the various camps.

Table 1

Post-Cold War Nuclear Option Summary

SUPERIORITY		STATUS QUO		MINIMALIST		DISARMAMENT	
Methodology	**End**	**Methodology**	**End**	**Methodology**	**End**	**Methodology**	**End**
- N/A	- More	- Parity	- Continued reduction, perhaps to zero	- Finite no.	- Low hundreds to 1,000	- Parity	- Zero
		- Bilateral		- Unilateral		- Bilateral	
		- Verifiable		- Verifiable		- Verifiable	
		- Slow		- Fast		- Fast	

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[116] This does not suggest that some disarmament groups do not advocate any unilateral initiatives. For instance, the Canberra Commission Report recommends unilateral nuclear de-alerting as a first step in the disarmament process. Canberra Commission on the Elimination of Nuclear Weapons, *Introduction Statement.*

[117] Ibid. Holdren, et al., 89.

[118] Holdren, et al., 90-91.

Narrowing The Choices

This study will return to these post-Cold War options in a later chapter in an effort to ascertain the feasibility of various de-alerting methods in different options. In an effort to simplify that discussion, the most extreme of the future post-Cold War options will be eliminated from consideration at this time.

Identifying extremes in these four options, however, requires an assumption to be made concerning the nature of nuclear weapons. For instance an assumption that nuclear weapons are stabilizing might lead to a rejection of the nuclear disarmament option or an assumption that nuclear weapons are destabilizing or inconsequential could lead one to embrace the disarmament option. Before eliminating options from further discussion, then, this issue will be explored.

Nuclear Weapon Stabilizing?

Much like every other issue involving nuclear deterrence there is no small debate concerning the effects of nuclear weapons on international stability. This short section surveys three schools of thought on the nature of nuclear weapons.[119]

The first school of thought is as old as the nuclear weapon itself. This school believes that nuclear weapons actually create international stability based on their awesome destructive nature.

Bernard Brodie first embraced this philosophy in 1946. Brodie suggested almost immediately upon hearing of the detonation of the first atomic device that the nature of war had now shifted. Brodie thought that in the nuclear world the new objective of the military was to avoid war.[120]

Has fifty years of nuclear history proven Brodie correct? Some say yes. Kenneth Waltz perhaps captures this school's opinion best when he argues that nuclear weapons have enhanced stability by, among other things, making the potential stakes in war too

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[119] Consult Peter R. Lavoy's evaluation of works by Kenneth Waltz and Scott Sagan ("The Strategic Consequences of Nuclear Proliferation," *Security Studies,* Vol. 4, No. 4 (Summer 1995): 695-753) for a more detailed handling of the question of the stabilizing nature of nuclear weapons.

[120] Bernard Brodie, ed., *The Absolute Weapon: Atomic Power and World Order* (New York, NY: Harcourt Brace, 1946), 76.

great to risk.[121]   Richard Harknett agrees, stating that under the nuclear umbrella competition between states is muted somewhat and while not eliminated, it is "channeled away from the military battlefield."[122]

Not surprisingly, General Habiger agrees as well. In a speech before the Atlantic Council, after citing statistics which show a marked drop in world-wide war casualties since the advent of nuclear weapons, the general suggested that the superpowers have not engaged in major military conflict due to the presence of their nuclear arsenals.[123]

The second school of thought holds the position that nuclear weapons are actually a destabilizing influence on the international system. While many authors have discussed this concept as it pertains to nuclear proliferation, for the purposes of this discussion, only the nuclear weapon's impact on the stability between the US and Russia is germane. This topic is addressed in greater detail in a later chapter, but for the purposes of this discussion it suffices to say that many of the disarmament or zero alert advocates feel that possession of strategic nuclear weapons, especially when combined with a Russian launch on warning doctrine and a crumbling command and control and early warning infrastructure, creates a dangerous environment.[124]

The third school of thought sees nuclear weapons as not having been the principal reason for a lack of superpower conflict during the Cold War. This school is well represented by John Mueller who contends that a general abhorrence to major war had already been injected into the superpowers by the two major wars of the early twentieth century. He contends that this and other factors unrelated to the advent of the nuclear

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[121] Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate* (New York, NY: W.W. Norton, 1995), 4-7.

[122] Richard J. Harknett, "State Preferences, Systemic Constraints, and the Absolute Weapon," in *The Absolute Weapon Revisited, eds.* T.V. Paul, Richard J. Harknett, and James J. Wirtz (Ann Arbor, Mich.: University of Michigan Press, 1998), 62.

[123] General Eugene B. Habiger, "Deterrence in a New Security Environment," *National Defense University Strategic Forum*, no. 109, April 1997, n.p.; on-line, Internet, 26 December 1998, available from http://www.ndu.edu/inss/strforum/forum/109.html.

[124] General Lee Butler, "A Voice of Reason," *Bulletin of Atomic Scientists 54,* iss. 3, (May/June 1998): 58-61. Blair, interview.

weapon actually created an environment where the superpowers sought to avoid major conflict.[125]

So which school is correct? Are nuclear weapons only remotely responsible for a lack of superpower conflict after WWII as suggested by John Mueller? Are they actually destabilizing as some in the disarmament camp suggest? Or do they deter conflict?

Proving that nuclear deterrence "works" is virtually impossible. Why? Simply stated, since we cannot crawl inside the heads of senior adversary leadership (where deterrence principles are weighed and decided) then deciding what deters will always be difficult since the desired outcome is by definition the absence of something tangible.

So if we can't be absolutely certain nuclear deterrence "works," what *do* we know? General Habiger spoke of the decrease in major conflict since the advent of the superpower nuclear standoff and as Colonel Dennis Drew and Dr. Donald Snow point out, while there is no way to prove that our nuclear forces deterred Soviet attack, evidence clearly allows that assumption.[126]

Thus all that we know for sure is that major power head-to-head conflict has not occurred since the advent of nuclear weapons. Even if we cannot show a direct causal link between that the lack of major power head-to-head conflict and the presence of nuclear weapons, it is still reasonable to conclude that the maintenance of nuclear weapons by the superpowers is at least not *de*-stabilizing.

Eliminating Options on the Extremes

This study's author accepts the logic of Drew and Snow and assumes there is stabilizing value in the maintenance of nuclear weapons in the US/Russian context. With that said, the *disarmament* option can be eliminated from further consideration.

In addition, on the other extreme the *superiority* option is eliminated from further consideration based on its incompatibility with expressed long-term US policy and the

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[125] John Mueller, "The Escalating Irrelevance of Nuclear Weapons," in *The Absolute Weapon Revisited, eds.* T.V. Paul, Richard J. Harknett, and James J. Wirtz (Ann Arbor, Mich.: University of Michigan Press, 1998), 73-78.

[126] Col Dennis M. Drew and Dr. Donald M. Snow, *Making Strategy, An Introduction to National Security Processes and Problems* (Maxwell AFB, AL: Air University Press, 1988), 163.

near universal rejection of superiority-based nuclear superpower policies in the late and post-Cold War eras.

Following the next chapter's discussion of de-alerting in general, this study returns to the two remaining centrist options, the *status quo camp* and the *minimalist camp* to see what role if any, de-alerting might play in either option.

Chapter 6

Nuclear De-alerting

Many of the partial de-alerting options that this chapter explores naturally fall into one of the other camps (minimalist or status quo) previously explored (since partial de-alerting by definition leaves some forces on alert). While this might suggest de-alerting does not merit consideration as a separate "camp" on its own, many feel that zero alert options are viable stand-alone options for the future. As such, in an effort to present a complete picture, both categories of de-alerting are explored in this chapter, partial and zero.

What follows then is a general discussion of de-alerting. First, the reasons why many are calling for nuclear de-alerting will be addressed. Second, the most prominent and credible of the de-alerting proposals will be discussed. Third, specific methods for nuclear de-alerting will be discussed and evaluated based on de-alerting advocates' own measurements of viability. And finally, in the last section of this chapter major arguments opposing de-alerting will be presented.

Why de-alert?

Political compatibility. The most intuitively obvious reason to make changes to US nuclear policy would be the very visible fact that the Cold War has thawed and US and Russian relations have been profoundly altered. As Retired Senator Sam Nunn declared in a co-authored article in 1997,

> It is time for the United States and Russia to cast off the mental shackles of deterrence, to "de-alert" our strategic forces and embrace a new formula that makes our nuclear relationship more compatible with our political relationship.[127]

And consider the words of Bruce Blair, probably the most recognizable and prolific author in the de-alerting camp, in 1998 testimony before Senate Armed Services Committee, Subcommittee on Strategic Forces, "de-alerting would align our nuclear

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[127] Senator (ret) Sam Nunn and Bruce G. Blair, "From Nuclear Deterrence to Mutual Safety," *Washington Post*, 22 June 1997, C1-2.

postures with the end of the Cold War, a long overdue adjustment…and lay the groundwork for a truly productive partnership."[128]

This call to discard outmoded deterrence concepts and force US defense posture to mirror expressed political views is common among de-alerting advocates as well as those in the disarmament and minimalist camps. In the de-alerting debate, however, this seemingly foundational reason to de-alert is often glossed over, either due to its assumed intuitive nature or possibly because the other reasons to de-alert seem much more compelling. In his works on de-alerting, Blair consistently cites two additional primary reasons to pursue a posture of zero alert.[129]

Use-or-lose nature of Russian nuclear forces. As mentioned earlier in this paper, economic constraints placed on the Russian military have increased Russian reliance on its nuclear arsenal for defense. According to Blair and others, these same economic problems have impacted the survivability of this now "load bearing" nuclear arsenal. Economic constraints have led to Russian nuclear forces' inability to disperse to sanctuaries such as wooded areas and oceans.[130] This inability to disperse precludes the Russian force's ability to retain a secure retaliatory capability, undermining a fundamental premise of deterrence and contributing to a launch-on-warning doctrine.

Crumbling Russian nuclear infrastructure. Economic problems are also at the center of what is the most oft-cited reason for nuclear de-alerting, the disintegration of the Russian nuclear early warning system. The problem appears to be bad and not getting better. According to Russian Defense Minister Igor Rodinov, Russian outlays to maintain their nuclear command and control systems have been a mere 10.5 percent of

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[128] Bruce G. Blair, Statement before the Subcommittee on Strategic Forces, Senate Armed Services Committee, 31 March 1998, n.p.; on-line, Internet, 20 December 1998, available from http://www.brook.edu/views/testimony/blair/19980331.HTM.

[129] While there are several respected authors advocating nuclear de-alerting, Dr. Bruce Blair of the Brookings Institution is perhaps the most prolific, most oft-cited de-alerting proponent. His many works on the subject (many co-authored with other de-alerting advocates) and acceptance within the de-alerting community led to the reliance on many of his concepts in establishing general de-alerting views for this section.

[130] Blair, 31 March 1998 Senate statement.

the funds needed to maintain the system.[131] How has this neglect affected the reliability of the system components?

Russian space-based early warning sensors are now operating at a fraction of their Cold War capability. The primary Soviet satellite early warning system consisted of a nine-satellite constellation guaranteeing coverage of US missile launch areas. This same system now operates a mere three active satellites. And while the Russians deployed a geostationary system to augment this capability in the 1980s, only two such satellites remain active.[132] Soviet systems have historically had shorter lifespans than their US counterparts and this rapid decay serves to exacerbate the problem. According to Paul Podvig of the Center for Arms Control,

> Over the last five or six years, Russia kept the configuration working all the time, but it started disintegrating at the beginning of 1998. The situation in the past six years wasn't good, but they had reserves…Now they've used up those reserves. The problem is serious.[133]

Russian ground-based early warning sensors are also in a state of decay. According to Dr. Blair only three of Russia's nine large phased array early warning radars are still operational, and some important radar facilities in former Soviet states are no longer functioning.[134]

Senator Tom Daschle, a vocal proponent of partial nuclear de-alerting, explained the impact of this Russian early warning system decay. In a speech before the US Senate, the senator cited a Congressional Budget Office report which concluded that the decay of the early warning system would allow some missile attacks on Russia to go undetected. In addition, he reported that Russian early warning satellite coverage of US missile fields is now less than 17 hours per day.[135] Theodore Postol of the Massachusetts Institute of Technology explains that the many undetectable launch corridors have resulted in a situation where reaction time for Russian leaders for an attack on Moscow could be as

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[131] Bruce W. Nelan and Brigid O'Hara-Forster, "Nuclear Disarray," *Time,* 19 May 1997, 46. Note, some have suggested that Defense Minister Rodinov's claims are exaggerated for internal domestic political reasons.

[132] David Hoffman, "Russia's Myopic Missile Defense," *Washington Post*, 10 February 1999, 1.

[133] Ibid., 1.

[134] Hoffman, 1. "The Russian Threat," *Union of Concerned Scientists De-alerting Primer*, n.p.; on-line, Internet, 25 September 1998, available from http://www.ucsusa.org/arms/primer.html.

[135] Daschle, 21 September 1998 testimony before Congress.

little as four to five minutes.[136] It is here, according to many de-alerting advocates, where the real danger lies.

These dramatically reduced reaction times reinforce Russian leaders' reliance on a launch-on-warning doctrine and compress their decision making to a point where leaders face a risk of annihilation by a first strike if they pause for attack confirmation. To de-alerting proponents all of this clearly indicates a need for action.

De-alerting Options

Removing forces from "hair trigger alert" is obviously the de-alerter's solution to the problems discussed above. Representative de-alerting options from both the zero alert and partial de-alerting factions are outlined here.

Zero alert. Joining Dr. Bruce Blair in his support for a zero alert option are Princeton University professors Harold Feiveson, formerly of the US Arms Control and Disarmament Agency, and Frank von Hippel, former Presidential Science Advisor and Assistant Director for National Security. They have written extensively on zero alert concepts and collaborated on a 1997 article in *Scientific American* to explain a commonly embraced proposal for zero alert. While other zero alert plans may vary in timing and mechanics, the basics of the following six-step proposal appear somewhat representative of other zero alert initiatives.[137]

First, the authors recommend the immediate unilateral removal of the Mk 21 warheads from all Peacekeeper (MX) ICBMs. The Peacekeeper system is targeted for early removal since it has already been identified for elimination under START II (although the warheads are slated to be installed on the Minuteman III). This is based on the Peacekeeper's status as a multiple independently targetable re-entry vehicle (MIRV) platform and the Mk 21's counterforce/hard-target kill capability.[138]

Second, the US should remove all Minuteman III ICBMs from alert using an easily reversible hardware procedure (manual safing, which is discussed later in this paper).

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[136] Hoffman, 1.

[137] De-alerting proposals by even a single author often vary in details but still align on key concepts. In the plan addressed here, the first four steps are done simultaneously and unilaterally. Blair, Feiveson, von Hippel, 74-81.

[138] Blair, Feiveson, von Hippel, 81

This temporary de-alerting would be replaced by a more permanent procedure later when Russian leaders reciprocate with similar measures.[139]

Third is the de-alerting of all Trident submarines slated for deactivation under START II and reducing remaining warhead counts on SLBMs to four per missile, also per START II.[140]

Fourth, much as the Mk 21 was removed from the MX based on its lethality, the authors recommend removal of all W88 warheads from the Navy's Trident II, to be replaced with lower yield weapons.[141]

Following these unilateral steps, the fifth step involves a pause to allow Russian leaders to verify these US initiatives. During this pause, the US would offer a more open inspection regime and encourage the Russians to do the same.[142] According to the authors, "this change in policy would persuade Russia to follow suit and take most of its missiles off hair-trigger alert."[143]

After Russian reciprocation the plan then proceeds to the final step. This involves measures to bring remaining US SSBNs to a lower level of readiness where launch would take at least 24 hours to accomplish. At this point, all US forces would be completely removed from nuclear alert.[144]

In summary, this somewhat abbreviated outline of a zero alerting plan recommends the unilateral removal of all US nuclear forces from alert except approximately 600 warheads in SSBNs on patrol. These 600 weapons are meant to serve as a deterrent hedge until Russian leaders respond with like reductions. After both sides reach similar reduced levels of alert, the remaining forces would be de-alerted.[145]

This proposal is representative because it contains key elements common to many zero alert plans. These elements are a large unilateral US de-alerting first move outside

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[139] Ibid., 81.

[140] Ibid., 81.

[141] Ibid., 81.

[142] Ibid., 81.

[143] Ibid., 80.

[144] Ibid., 80.

[145] Ibid., 80.

formal negotiations, a period of explanation and invitation for reciprocity, and a final phase in which the US and Russia would de-alert their remaining forces together.

Before leaving this section on total de-alerting, it would be unfair to leave the reader with the impression that all zero alert proponents recommend the need for some reciprocal bi-lateral moves. In fact even Dr. Blair, who was part of the trio of authors on the six step proposal just described (which does allow for a pause for Russian reciprocation), has made it very clear in other venues that he sees no reason the US should wait for Russian reciprocation to go to zero on-alert forces.[146]

Partial de-alerting. As discussed in Chapter 1, partial de-alerting is the removal of some but not all nuclear forces from strategic alert. Senators Daschle (D-SD) and Bob Kerrey (D-NE) have each suggested initiatives involving the de-alerting of major components of the US arsenal. Their initiatives differ from the aforementioned zero alert proposals not only in the obvious areas of scope and speed, but also in their continued reliance on existing arms control regimes.[147] These senators' proposals target for de-alerting forces they feel exceed US legitimate needs for defense and they then recommend a more robust arms reduction regime to take over from there.

De-alerting Methods

De-alerting advocates have proposed several diverse methods for removing forces from alert. Some are deceptively ingenious low-tech methods, some rely on electronics, and some involve hardware removal up to and including the re-entry systems (RS) themselves. Each of these methods will be briefly reviewed below. As part of this discussion, each of the methods will receive a cursory evaluation based on minimum de-

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[146] When asked why it would not be prudent to maintain a small hedging-type alert force if Russia would not go to zero alert, Dr. Blair responded by asking "What's the point?" To Blair, deterrence is not maintained by the speed of a response, but rather by the "certainty of retaliation." According to Blair, as Russian strategic nuclear forces shrink, probably to deliverable warhead totals in the hundreds in the next few years, they will no longer possess adequate means to destroy US forces in a decisive first strike. Thus US re-alertable secure forces (SSBNs) would be able to respond within twenty-four hours and as such would maintain deterrence without being on alert. Blair, interview.

[147] Daschle, 21 September 1998 testimony before Congress. Senator Bob Kerrey, Speech to the Council on Foreign Relations, 17 November 1998, *Stimson Center Internet Site*, n.p.; on-line, Internet, 22 February 1999, available from http://stimson.org/policy/kerspch.htm.

alerting requirements as advocated by Frank von Hippel and Bruce Blair. According to Blair and von Hippel,

> For a proposal to satisfy de-alerting requirements, it must have three characteristics. First it must actually *increase the launch preparation* time; second, it must be *verifiable*; and third, it must not jeopardize the existence of a *core force which is survivable, reconstitutable and capable of deterrence*.[148]

    Low tech. While lacking the political flash of pulling nuclear tips from missiles, several low tech approaches have been suggested that would render missile systems non-launch capable. One of the more creative suggestions voiced thus far involves the placement of several tons of gravel or rocks on top of land-based missile silo doors. While there are possible problems related to reconstitutability in a plan such as this (reliance on and dependability of heavy earth moving equipment to prepare for launch and major sortie maintenance could be problematic), it creatively satisfies the other two of the de-alerter's requirements. These piles of gravel would certainly slow reaction time and verifiability from ground or space-based reconnaissance would be possible.[149]

    De-alerting advocates have suggested other approaches on the low end of the technology scale. For instance, some suggest modifying shelters from which Russian mobile missile systems are designed to fire to prohibit launch, so the vehicles would have to deploy in order to fire. Some suggest ideas such as draining hydraulic fluid from mobile ICBM transporter erector launchers (TEL) or otherwise mechanically altering TELs to delay their erection.[150] Options such as these would certainly be difficult to verify, but allow for system reconstitution and creatively and inexpensively address the goal of slowing the nuclear reaction time.

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[148] To Blair and von Hippel, the third of their criteria, ensuring forces are reconstitutable is the foundation of deterrence in the de-alerted world. This is something of a shift from the Cold War deterrence paradigm where fast reaction, dispersement, and hardening guaranteed survivability which served as the foundation of deterrence. Meeting Summary, The Future of Russian-US Strategic Arms Reductions: START III and Beyond," Joint Russian/US conference. Emphasis added.

[149] This method has been discussed in different forums without attribution but was attributed to Richard Garwin by Dr. Bruce Blair. Blair, *Global Zero Alert for Nuclear Weapons*, 92. "Nuclear Disarmament with Low-Tech Approach," *Christian Science Monitor*, 20 February 1998, n.p; on-line, Internet, 24 September 1998, available from http://www.epnet.com/cgi-bin/epwnorb/page.

[150] Most of these mobile system disabling alternatives have originated with Dr Blair. From Union of Concerned Scientists synopsis of Dr. Blair's de-alerting initiatives. *Union of Concerned Scientists De-alerting Primer--Bruce Blair*, n.p.; on-line, Internet, 25 September 1998, available from http://www.ucsusa.org/arms/primer.html.

While low tech ideas such as dumping gravel on launcher doors occasionally elicit grins and some legitimate criticisms, they do satisfy some key criteria for acceptability, as the effects are reversible but not quickly or easily.

Electronic. Another way to delay a missile's launch is by affecting it electronically. One of the easiest ways to electronically alter the launch capability of some systems is through detargeting. Detargeting as a concept tied to nuclear arms control-type measures first came under scrutiny in 1993 when Presidents Yeltsin and Clinton agreed to ensure that their strategic nuclear missiles were no longer aimed at each other, but instead were aimed at broad ocean areas.[151]

Detargeting in this sense is something of a misnomer as SLBMs and the most modern ICBMs in the fleet do not maintain targets on-board but receive targeting data immediately prior to launch.[152] And even for the remainder of US Minuteman ICBMs, where target sets are stored in the memories of on-board computers, detargeting remains largely a symbolic gesture, because in the Minuteman ICBM weapon system, the primary target (where the sortie is aligned day-to-day) can be rapidly changed from the launch crew's control center. And often sorties can align to new targets in-flight, negating any need to delay launch waiting for sorties to re-align on the ground.

A more serious detargeting program would remove all valid target information from any weapon system computer. A complete detargeting scheme such as this would necessitate missile crews in launch control centers or SSBNs manually transfer target data to each missile computer prior to launch.

A total detargeting proposal such as this probably fails to meet the Blair/von Hippel criteria for de-alerting on one and possibly two counts. While retargeting certainly provides for a reconstitutable force (one de-alerting plan requirement), the ease of its reconstitution under a detargeting scheme may undermine its acceptability in other areas. Consider that 1990s upgrades in ICBM weapon system computers allow a fairly fast re-targeting capability, with the first few sorties per squadron being ready for execution within minutes after targeting data is received by missile combat crews. While Dr. Blair

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[151] Michael R. Gordon and Eric Schmitt, "US is Considering Aiming its Missiles away from Russia," *New York Times*, 6 December 1993, A1 and A8.

[152] Blair, *Global Zero Alert for Nuclear Forces*, 79-80.

suggests in his work *Global Zero Alert for Nuclear Forces* that the entire ICBM force would not be executable for 25 hours, with the new control center computers, a significant portion of this whole would be ready much sooner.[153] In addition, US SSBN forces also have an indigenous target data generation capability allowing totally new targeting to be generated and loaded into blank computers in one to two hours.[154] Finally, in any detargeting plan verifiability would be problematic as there is obviously no external evidence that sortie memories have been erased.[155]

For US ICBMs, the most extreme of the electronic-based de-alerting schemes would be the removal of power from the missile itself.[156] Air Force Space Command (AFSPC) logistics/maintenance (LG) and operations personnel studied such a de-alerting scheme in late 1997 and concluded that there are several drawbacks to such a plan. Among the most significant drawbacks to removing all sortie power include an estimated ten percent missile guidance set (MGS--on-board missile guidance computer) failure if start-up were attempted within one year of shutdown and an estimated failure rate of twenty percent if the site remained shutdown for more than one year. The same study indicated that these expected failures would be costly, not only in time but monetarily as well. Consider that a routine MGS change requires approximately 12 hours to complete, involves 24 on-site personnel, and costs $250,000 per MGS (cost of the component alone). This costly, manpower intensive process would extend the re-alerting far beyond AFSPC's best-case estimate of a 96-hour force-wide regeneration time.[157] This drawback has been recognized by de-alerting advocates themselves who suggest this problem could be eliminated "if new guidance systems were built so that land-based missiles could lapse into a dormant state like the SLBMs."[158] Unfortunately, the USAF is already acquiring

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[153] Ibid., 79-80.

[154] Ibid., 87.

[155] This is not to suggest that targeting could not be verified, but the mechanism would probably involve permanent monitors collocated with missile units and/or greatly expanded inspection/monitoring regimes. While possible, the depth of transparency involved would be unprecedented.

[156] Since US SLBMs are normally maintained in a dormant state, powering-down missiles would obviously not serve to delay launch. Blair, *Global Zero Alert for Nuclear Forces*, 86-87.

[157] Lt Col Hebert and Lt Col Cook, "Point Paper on Options to De-alert Minuteman," (paper prepared to evaluate de-alerting impact, AFSPC/LGML & AFSPC/DOMO, 31 December 1997).

[158] Blair, *Global Zero Alert for Nuclear Forces*, 88.

new MGSs for its Minuteman ICBM to extend the weapon system's life well into the next century and these new systems do not possess this dormancy feature.

For the land-based leg of the US triad, by far the easiest means of electronically preventing launch of ICBMs is through manual safing. As the name implies, manual safing is much like engaging the "safety" on a rifle. Safing an ICBM requires each ICBM missile launch facility to be penetrated by two ICBM maintenance personnel and two security policemen. Maintenance personnel penetrate the site security system, gain entry into the below-ground portions of the launch facility, enter the launcher equipment room and insert a safing key into a safety control switch, thereby electronically prohibiting launch. Sorties can only be "unsafed" by the reverse procedure, followed by a weapon and security system test verified by the missile combat crew on duty in the owning launch control center.

This approach easily satisfies two of the de-alerter's pre-requisites. It provides for a slowed launch reaction while allowing for an easy reconstitution of forces. Unfortunately, much like the detargeting approach discussed earlier, this approach would also be virtually impossible to verify externally and would require a robust inspection and verification regime.[159]

Hardware removal. This approach to delaying launch is by far the most radical and contentious. The concept is simple: to prevent rapid launch, personnel remove or misconfigure components that are vital to the launch of the missile and that would require significant time to replace or reconfigure. As one could imagine, with complex strategic nuclear weapon systems there is virtually an endless combination of hardware actions that could be taken to prevent systems from launching. An examination of each of them is certainly beyond the scope of this paper. Therefore, the general types of hardware related de-alerting avenues will be grouped into two categories here based on the level of

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[159] HQAFSPC LG and DO personnel studied various de-alerting options and ranked them based on implementation effort/cost, effort to regenerate, manpower costs, storage costs, dormancy concerns, and verification difficulty. While all of their reviewed options had some difficulty with verification, AFSPC DO and LG personnel's recommended course of action (if asked to de-alert) was a manual safing option. Hebert and Cook.

difficulty required to re-alert, minor and major, the former requiring little effort to reconstitute the sortie and the latter being complex and difficult.[160]

Advocates have posited several de-alerting approaches for land-based forces that would fall into the *minor* category as defined above. One involves the removal of cables and/or connectors for the ballistic gas generators (BGG) which initiate the opening of the 110-ton launcher-closure door that sits atop each US missile silo. With this cable disconnected, the only other way to open a launcher closure door is a manual procedure that takes an extended period of time and involves multiple maintenance technicians and a large cadre of security forces.[161]

According to an AFSPC study, this BGG option is a fairly simple undertaking to accomplish and reverse, would take approximately 72 hours to reverse (force-wide), and would have minimal negative effects on the weapon system. While probably satisfying two of the requirements for a credible de-alerting plan then, BGG removal suffers from the same problem that has plagued many of the de-alerting alternatives thus far reviewed, BGG removal would be extremely difficult to verify.[162]

The BGG removal option is a fairly representative example of a minor hardware configuration option. While other such ICBM equipment configuration ideas exist and could be explored, they would probably not add significantly to this discussion. Why? Any option falling into this category (minor) would by definition require minimal effort to "undo" (would be close to the 72 hour time estimate for the BGG option) and since ICBM configuration activities would undoubtedly occur out of sight, underground they would suffer from the same verifiability problems already expressed.

While not as much has been written concerning such *minor* hardware de-alerting for SLBMs, there are undoubtedly many minor configurational modifications that would serve to delay launch. Two such ideas that have been proposed involve either a partial

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[160] This breakout could have easily been based on length of time required to re-alert. Effort to re-alert was chosen as a categorization device because it more accurately portrays the vast differences in degrees of difficulty between minor and major components (a small hand-held device versus the removal of a re-entry system for example) and the potential trade-off between time and effort .

[161] This manual opening procedure is actually the primary method used to gain access to the larger components of the missile system for maintenance and is not considered an alternative for launch operations.

[162] Hebert and Cook.

disassembly of the SLBM itself or leaving flood plates installed on the launch tubes while on patrol. The latter option, not removing flood plates from SSBN launch tubes (an operation normally performed before arriving on patrol as part of a weapon system checkout), would probably lengthen missile reaction time from "fifteen minutes or so to eighteen hours."[163] Much like the ICBM minor hardware options discussed above, while satisfying the de-alerter's need for reconstitutability and creating a delay in launch reaction time, any operation conducted beneath the ocean on an SSBN would be very difficult to verify.

Just as with the minor hardware de-alerting possibilities discussed above, there are equally numerous *major* hardware actions that could be undertaken to de-alert US nuclear forces. De-alerting proposals have consistently contained recommendations for two major hardware removal actions: removal of the RS and removal of the missile guidance system.[164]

The first, and by far the most often discussed, major hardware de-alerting proposal is the removal of the RS. While only suggested as an in-port option for SLBMs for obvious reasons, this proposal has been routinely discussed for land-based ICBMs.[165] Many are drawn to this option for a number of reasons. First, this option has the symbolic benefit of removing all nuclear material from the weapon system. Second, this option is by far the most visible of the de-alerting options thus far discussed, allowing verification by numerous means. Third, many are attracted to this option based on the longer re-generation times associated with it.

At first glance, the RS removal option might seem to satisfy the three needed characteristics of a de-alerting plan. RS removal certainly increases launch reaction time and is by far the most verifiable hardware-related option thus far reviewed. It is in the third criterion, reconstitutability, however, where RS removal's viability as a credible de-alerting option comes into question. AFSPC and Bruce Blair both report that an ICBM

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[163] Blair, *Global Zero Alert for Nuclear Forces*, 88-89.

[164] While there have been other discussions advocating removing other major components, such as the warhead shroud or critical electronic drawer components, the two examples discussed in this section capture the types of difficulties involved in major hardware component de-alerting.

[165] From Union of Concerned Scientists synopsis of Dr. James Goodby and Dr. Harold Feiveson's de-alerting initiatives. *Union of Concerned Scientists De-alerting Primer—Goodby/Feiveson*, n.p.; on-line, Internet, 25 September 1998, available from http://www.ucsusa.org/arms/primer.html.

force de-alerted by RS removal would require years to re-alert which, as Blair points out, "would doubtless exceed the tolerance of US strategic planners.[166]

In addition, storage of the removed RSs would be an extremely difficult and costly problem to solve. While some de-alerting advocates have recommended using existing, vacant missile silos in already de-activated missile fields as storage facilities for RSs, others propose storing removed warheads on bases where dissimilar weapon systems are operated. For instance, ICBM RSs could be stored at bomber base nuclear storage facilities (and vice versa). This would provide secure storage far enough away to preclude a rapid re-alerting. [167] Regardless of the specific scheme embraced, most recognize that existing facilities do not have the capacity to support the storage of a de-alerted nuclear fleet.

Removal of the guidance systems has also been advanced as a possible means of major hardware de-alerting. While advantages and disadvantages of a guidance system removal plan for land-based ICBM nearly mirror those associated with the RS plan discussed above, there has been much unique discussion of a guidance system removal-based plan for de-alerting SLBMs.[168]

SLBMs on patrol are clearly the toughest of all systems to verifiably de-alert. Dr. Blair has been one of the few de-alerting advocates to tackle this issue in print. Some of Blair's most creative (necessarily due to the difficulty involved) solutions to the SSBN de-alerting issue involve the removal of guidance systems from the missiles. Blair has recommended at least two such methods. In March 1998 Blair recommended to the Senate Subcommittee on Strategic Forces that SLBM guidance systems could be removed from missiles and kept on-board the parent SSBN. He suggested that a verifiable, specially placed seal would allow a post-cruise verification to ensure that no systems were alerted while at sea.[169] Blair has also suggested another guidance system

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[166] AFSPC estimates a three to four year reconstitution schedule. This is based on equipment and personnel constraints. Blair, *Global Zero Alert for Nuclear Forces*, 99. Hebert and Cook.

[167] Turner, 68.

[168] The most significant difference in constraints of the RS removal plan and the guidance set removal plan would be in storage needs. While storing missile guidance systems in field locations requires secured (SECRET-level), specially equipped facilities, the additional security and handling requirements for nuclear re-entry system storage mandate far more exhaustive and costly facilities.

[169] Blair, 31 March 1998 senate statement.

removal de-alerting option for SSBNs. In his book, *Global Zero Alert for Nuclear Forces,* Blair recommends removing the SLBM guidance systems but instead of maintaining them onboard the SSBN, Blair recommends they be kept on a separate attack submarine on close patrol to be transferred to the SSBN at sea when tension levels increase sufficiently.

These measures, when combined with Blair's recommended robust regime of mandated limited patrol areas and closer SSBN monitoring, would obviously lengthen launch procedures, would offer some verifiability, and would allow for force reconstitution.

De-alerting Opposition

Nuclear de-alerting's opponents are both numerous and mightily credentialed, academically and militarily. While this section will draw upon several critics of de-alerting, the framework to guide this discussion comes from Major General Neary. In communications with Dr. Robert Pfaltzgraff, administration advisor on military matters and arms control, current President of the Institute for Foreign Policy Analysis, and professor at the Fletcher School of Law and Diplomacy, General Neary outlined five areas capturing the most significant arguments against de-alerting.[170] These arguments could be labeled as follows:

1. Russians lack incentive to de-alert
2. Status quo is sufficient
3. De-alerting negatively affects operations environment
4. Re-alerting in crisis is destabilizing
5. De-alerting does not address the root problem

Each of these criticisms of nuclear de-alerting will be explored in the sections that follow.

Russians lack incentive to de-alert. Many in the opposition camp look over the 21st century's strategic landscape and see how the virtual collapse of the once powerful Russian conventional military has forced Russian leaders to embrace and publicly proclaim a shift in defense policy. As discussed earlier in this paper, Russian leadership now relies on its nuclear arsenal, officially as its primary guarantor of strategic defense

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[170] Personal meeting notes exchanged by Major General Neary and Dr. Pfaltzgraff, 19 February 1998. (Notes supplied to author by General Neary following personal interview conducted on 4 February 1999).

and unofficially as its last claim to superpower status. Therefore, de-alerting opponents "see very little incentive for [Russian leadership] to embrace the concept."[171]

Status quo is sufficient. During an interview with the Defense Writer's Group in Spring 1998, General Eugene Habiger, then the Commander of US STRATCOM, expressed the view (shared by many de-alerting opponents) that the status quo is moving towards de-alerting as fast as is safely possible. General Habiger said,

> The glide path we're on now for de-alerting is stable, its [sic] verifiable, and it's well thought out. Today the Russians have almost 3,000 weapons on alert, under START II those numbers will be down to around 1,000 or so, and under START III those numbers will be down to probably less than 700. What's the problem?…The United States has taken some extraordinary steps.[172]

General Habiger had previously outlined these "extraordinary steps" in a speech before the Atlantic Council in February 1997. In it the general listed several initiatives since the end of the Cold War that reflect aggressive US action and commitment to handling the nuclear issue: the September 1991 unilateral Bush de-alerting initiatives (bomber and Minuteman II), US signing of the Comprehensive Test Ban Treaty in late 1991, a unilateral reduction of non-strategic nuclear weapons by ninety percent, the 1993 Yeltsin-Clinton de-targeting agreement, fast action on START I requirements long before obligated by treaty, the Nunn-Lugar Cooperative Threat Reduction program, and an overall 75 percent reduction in US spending on strategic offensive systems in the last decade.[173]

In addition, proponents of status quo-type regimes are quick to point out that their formal treaty and inspection regimes promote confidence by providing tools to verify compliance, something they say is lacking in de-alerting schemes. According to status quo advocates, the lack of verifiability inherent to most de-alerting regimes is too risky.[174] Some de-alerting opponents and status quo/formal inspection regime advocates are quick to point out where past US unilateral actions without formal verification

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[171] Ibid.

[172] General Eugene B. Habiger, transcript of oral interview by Defense Writers' Group.

[173] Habiger, *Deterrence in a New Security Environment*.

[174] Kathleen Bailey, "'De-alerting' Nukes Would Imperil US Security," *Publications of the Center for Security Policy*, no. 98-D9 (Attachment 2), 20 January 1998, n.p; on-line, Internet, 22 December 1998, available from http://www.security-policy.org/papers/1998/98-D9at2.html.

mechanisms have led to uneven reductions and unfulfilled promises. According to General Habiger again, since the end of the Cold War the US has unilaterally undertaken nineteen separate initiatives and while Russian leadership has promised to reciprocate, they have only done so on six of the nineteen.[175] To the status quo advocate, then, the current system has made significant moves in a short period of time and the structure and verifiability provided by the present system is indispensable.

De-alerting negatively affects operations environment. Some de-alerting opponents have expressed concerns about the negative effects de-alerting has on the overall operations environment. General Neary suggests that this happens at two levels. First, he contends that de-alerted forces would not be able to maintain senior leader interest at the Pentagon and Secretary of Defense level. This degraded interest would adversely affect funding and support. He suggests "non-alert forces would suffer and likely run aground in budget arenas."[176] General Neary's concerns are probably not unfounded. Consider that even today with nuclear forces remaining on alert, there are already concerns about a potential reduction in interest level by leaders and what that lack of interest means to nuclear forces. The Defense Science Board's Task Force on Nuclear Deterrence recognized just such a problem in its final report in late 1998. Among other observations, the task force suggested that the relegation of nuclear issues to the back burner is leading to insufficient "intellectual focus" on some nuclear issues, a disproportionate reduction in funding, and a loss of critical nuclear expertise.[177] Clearly the possibility exists for further problems if nuclear issues are relegated to a burner even further from the front of the defense stove.

General Neary's second concern in this area deals with the impact on personnel faced with operating and maintaining a weapon system without a viable, operational mission. According to the general,

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[175] Habiger, Interview with Defense Writer's Group.

[176] Neary, Personal meeting notes exchanged with Dr. Pfaltzgraff.

[177] Defense Science Board, Task Force on Nuclear Deterrence Report to Office of the Under Secretary of Defense for Acquisition and Technology (Washington, DC, October 1998), 10, 11, 13, 18.

I've lived through that as a commander…long term de-alerted forces would be a troubling people problem in terms of training, readiness, and espirit. [emphasis in original].[178]

While these two operational capability issues alone are not sufficient reasons to maintain forces on alert if not otherwise needed, when considered along with other concerns, they are important.

Re-alerting in crisis is destabilizing. One of the chief concerns voiced by almost every opponent of nuclear de-alerting is the possible crisis instability that could result from a rapid drive to *re-alert* during a crisis. The logic behind this fear is well expressed by Charles Glaser in the context of a rearmament race:.

> So, is deliberate nuclear war more likely when states are engaged in a rearmament race or when they already possess nuclear forces? A variety of considerations suggest that the rearmament race is more dangerous. The race may show that the disarmament regime was poorly designed, allowing one state to gain a nuclear monopoly. The nuclear state might then use its nuclear advantage to compel the end of a conventional war, or to destroy the adversary's nuclear re-armament capability, even though the disarmament regime was supposedly designed to deny this option.[179]

This same concept was explored by Thomas Schelling in his work *Arms and Influence.* Drawing from a WWI mobilization analogy, Schelling expressed great concern about procedures that require speed, initiative, and surprise and stress alerting or mobilization procedures that are hard for leaders to fully grasp and control. To Schelling processes such as these are to be feared as they can easily spiral out of control and lead to instability in a crisis.[180] While many de-alerting opponents share these fears, de-alerting proponents do not. Dr. Blair best responds to this argument with the assertion that Russian force totals will soon be so low based on financial constraints that their re-alerting, regardless of the speed at which it took place, would be inconsequential.[181]

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[178] Neary, Personal meeting notes exchanged with Dr. Pfaltzgraff.

[179] Charles L. Glaser, "The Flawed Case for Nuclear Disarmament," *Survival* 40, iss. 1 (Spring 1998): 115.

[180] Schelling, 241-245.

[181] Of course a nuclear force of any size is not "inconsequential." Dr. Blair simply intended to communicate that the size of the Russian arsenal vis-à-vis the US would be so small as to make its threat as a disabling first strike force less than credible. Dr. Blair's sources for these comments were his personal contacts within Russia. Blair, interview.

De-alerting does not address the root problem. The de-alerting issue has been described by some of its opponents as "a solution looking for a problem." These opponents look at the reasons to de-alert as cited by the de-alerting advocates and fail to see how de-alerting solves the problems.

As discussed earlier in this paper, there are several reasons de-alerting proponents cite to support their positions. In addition to the political goal to have our expressed post-Cold War dialogue match our post-Cold War force structure and doctrine, the other reasons to de-alert our nuclear forces can all be traced back to a crumbling Russian nuclear infrastructure. According to de-alerting advocates, the neglect of the Russian nuclear infrastructure has degraded systems to the point where launch on warning doctrine becomes mandatory to guarantee survival. To bring the argument full circle, de-alerting advocates suggest that removing all forces from hair trigger alert would remove the danger caused by these problems.

De-alerting opponents fail to embrace the logic that suggests that the solution to a Russian infrastructure problem is US "de-facto disarmament." To them "This is a little like saying that because your neighbor's unpredictable Pit Bull poses a danger to the neighborhood, you should shoot the well-trained German Shepherd you need for your protection."[182]

To de-alerting opponents, if the problem lies in the decaying of the Russian command and control network and early warning infrastructure, then that is where the US should spend its effort and money.[183]

Finally, there are some who suggest that the situation surrounding the state of the Russian command and control/early warning system is not as dire as others report. Consider comments made by Valeri Yarynych at the February 1998 Cambridge Massachusetts US/Russia meeting concerning the future of strategic arms reductions. In a response to a presentation on the need to modify operational practices by Blair and von Hippel, this retired colonel and current assistant to a member of the Russian Duma, stated

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[182] "Unilateral Nuclear Disarmament By Any Other Name Is Still Recklessly Irresponsible: Will Clinton Be Allowed To Do It," *Publications of the Center for Security Policy, no.* 98-D 6, 13 January 1998, n.p; on-line, Internet, 22 December 1998, available from http://www.security-policy.org/papers/1998/98-D6.html.

[183] Report of the Defense Science Board Task Force on Nuclear Deterrence, 15. Neary, Personal meeting notes exchanged with Dr. Pfaltzgraff.

that the "situation might have been painted a bit too darkly" by Blair and von Hippel, but generally agreed much could be done to improve the situation.[184] In addition, Yarynych suggested that even if Russian systems are degraded now, Russian leaders are not concerned (given the current political climate) because they feel the smaller retaliatory force they could deliver in response to a robust US first strike is still sufficient to deter US aggression.[185]

In addition, General Habiger, while not coming close to suggesting that Russian nuclear infrastructure is healthy, did make an important observation concerning an oft-cited 1995 Norwegian incident in the North Sea. In January 1995 a joint US-Norwegian scientific satellite was launched off the coast of Norway. This launch was detected but misidentified by the Russian early warning/tracking systems and for the first time ever, the so-called "nuclear briefcase" was activated by President Yeltsin.[186] This incident has been used frequently in the press and at least twice in front of the US Senate to illustrate the dire state of the Russian nuclear infrastructure.

General Habiger noted that this oft-cited incident did not occur because of a degraded command and control or early warning system, but because of a simple "bureaucratic foul-up." The error was one of the official notification of the pending launch not being forwarded through the appropriate channels, not a technical breakdown of the Russian command and control or early warning system as is often inferred.[187]

This is not to suggest that the error was not frightening, but the incident so often cited as evidence of a decaying early warning system was not only not caused by a poor command and control/early warning problem, but arguably was limited *because* of the operation of the Russian early warning and command and control system.

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[184] Meeting Summary, The Future of Russian-US Strategic Arms Reductions: START III and Beyond, Joint Russian/US conference.

[185] Ibid.

[186] Blair, Feiveson, von Hippel, 75.

[187] General Eugene B. Habiger, Interview with Defense Writers' Group.

Interim Summary

Before beginning the next chapter of this study, a review of the major points discussed thus far is worthwhile:

1. This paper began by expressing that all status quo military capabilities (including the nuclear alert force) must be continually re-evaluated to ensure that costs and risks do not overtake system benefits or utility.

2. To re-evaluate the utility of the nuclear alert force, the contextual environment that led to the genesis of the nuclear alert force was compared to the post-Cold War environment.

3. This review found enough similarities in the capabilities of potential adversaries to assume that the cost/risk of maintaining a nuclear alert force had not yet overtaken the benefit gained.

4. At this point four major schools of post-Cold War thought were surveyed in an attempt to understand how the different camps propose to deal with the post-Cold War environment.

5. Then, after the two most extreme of the post-Cold War options were eliminated from consideration, nuclear de-alerting was examined at length.

Using the information from the previous chapters, the final substantive chapter of this study explores the possible role of nuclear de-alerting in two possible alternatives for future US nuclear policy.

Role of De-alerting in Future US Nuclear Options

Exploring de-alerting's role in future US nuclear options is important considering the continued high level of interest in de-alerting in both the legislative and executive branches. Legislative interest in de-alerting has been chronicled throughout this study (some senators have supported de-alerting programs and de-alerting advocates have testified numerous times before the House and Senate). De-alerting also appears to be on administration's "short list" of policy alternatives for a post-START environment. Bob Bell, Special Assistant to the President for National Security Affairs and author of PDD-60, has suggested that the administration still considers de-alerting a likely course of action. Mr. Bell advised Dr. Blair that de-alerting could assume a "primary" role if START II fails to be ratified.[188] Mr. Bell similarly explained in late 1998 that if the Duma fails to act on START II, then "other measures" will be examined and that the administration is not against a "a reasonable plan" for de-alerting.[189]

This chapter explores possible roles for de-alerting in future US nuclear policy and force structure. Specifically, the various de-alerting methods discussed in the previous chapter are matched with the requirements of the two centrist future options or camps discussed in Chapter 5 (*status quo-type* and *minimalist camps*).

De-alerting in the Status Quo-type Camp

Previous examinations of the status quo-type camp revealed several process methodologies vital to any program in a status quo regime. These vital methodologies are: the need to maintain *parity* in the reduction process, the importance of *bilateral* processes, the need for *verifiability* in the system, and the desire to proceed in a *slow*, deliberate manner. Any de-alerting processes or methods should complement these requirements to be acceptable to proponents of a status quo-type system.[190]

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[188] Blair, interview.

[189] Robert G. Bell, Advisor to the President on National Security Affairs, interviewed by author at Strategic Control and National Security Conference, Boston Massachusetts, 18 November 1998.

[190] These discussions will concentrate on de-alerting methods for ICBMs.

General De-alerting Concepts for the Status Quo

De-alerting fits into a status quo-type regime in one of two ways. First, partial de-alerting might be employed as an initial step in a broader de-activation program. This would be similar in some respects to the 1991 initiatives taken by President Bush when he elected to remove forces from alert that had been previously identified for de-activation under START.

A key difference, however, in a Bush-type de-alerting initiative and one more in-line with a status quo-type approach as described earlier (which values parity, bilateral processes, verification, and a deliberate pace) lies in the timing or nature of the de-alerting itself. In 1991, while the de-alerted assets had been identified for eventual de-activation, they were pulled from alert unilaterally, long before required by treaty, and the nature of their eventual de-alerting left them unable to reconstitute quickly.[191] While the removal of these forces from alert still left the US and Russia with numerical parity, to remain true to the desired methodologies mentioned earlier, a status quo-type approach would seek parity throughout the process. This would be accomplished bilaterally and on a pre-arranged schedule under a verification regime.

The second way de-alerting might contribute to a status quo-type regime involves de-alerting, not as a precursor to deactivation, but as a negotiated end in itself. This type of approach is probably more in line with options being contemplated by the administration and might offer advantages. If START and CTR have taught us anything, they have shown us how costly large-scale rapid deactivation can be, often prohibitively so. It is possible that a negotiated partial de-alerting program could be employed as part of a broader reduction process to offset expense and remove from the alert some forces not needed for balance or stability.

Unlike the case where de-alerting was simply a precursor to deactivation, de-alerting as an end in itself requires much more thought, however. To ensure overall system stability leaders must ensure that forces remaining on alert would still meet all of the requirements of a credible deterrent: the numbers and systems must be survivable, have

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[191] Initial ICBM actions only involved the relatively easy to reverse manual safing option described earlier in this paper. Eventually all sorties were permanently de-activated.

the ability to respond quickly, be sufficient in number, and most importantly be *perceived* as credible by potential adversaries.

Specific De-alerting Methods Under a Status Quo System

Some of the de-alerting methods discussed in Chapter 5 better align with status quo objectives and methodologies than others. This section will explore which de-alerting methods are best suited for each of the two de-alerting concepts or scenarios discussed above.

In the first status quo de-alerting scenario described above de-alerting is simply a precursor to deactivation. In this type of situation, since these systems are not required to be deactivated until some date in the future, a de-alerting method would probably be desired that would allow for a rapid reconstitution with minimal negative effects on the weapon systems. If rapid and guaranteed reconstitution are important, there are three de-alerting methods that would suffice, two electronic and one hardware.

The first, and probably best-suited electronic method is *manual safing*. Fleet-wide manual safing could be accomplished or reversed in less than 72 hours with almost no chance of negative effects on a weapons system's launch capability.

The second electronic de-alerting means that would be acceptable in this case would be *electrical system shutdown*. Reconstituting systems that have been powered-down requires slightly longer than manual safing (approximately 96 hours force-wide depending on maintenance team availability) and carries the risk of losing 10 to 20 percent of the systems when restarted.[192]

In this first scenario, where de-alerting is a precursor to deactivation, hardware de-alerting methods could also be employed. For instance, early in the process when the time to de-activation is still presumably a long time away, a *minor* hardware de-alerting method (allowing rapid reconstitution) would offer roughly the same benefits as the manual safing electronic method discussed above. On the other hand, as the time for system deactivation gets nearer, a more permanent de-alerting method might be more cost effective. Simply stated, if the systems to be de-alerted are to be dismantled very

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[192] Loss rate upon start-up depends on length of time systems lie dormant. Hebert and Cook.

soon anyway, perhaps *major* hardware de-alerting options might be a better use of maintenance resources.

Finally, a combination of the minor and major de-alerting approaches discussed might be appropriate when the proposed de-activation time is significantly in the future. For instance, a purposeful, progressive de-alerting regime could be employed where electronic and minor hardware methods are employed early to be followed by more permanent major hardware de-alerting methods as deactivation dates approach.

The second status quo scenario described above, where systems are de-alerted, not as a precursor to disarmament, but as a negotiated end in itself requires a bit more thought. In this case the regeneration requirements (speed and required reconstitution reliability rates) would determine which specific de-alerting method would be best suited. If, based on the size of the forces remaining on alert, leaders require weapon systems to be reconstituted rapidly with minimal loss of capability, then the electronic and minor hardware de-alerting approaches discussed in the previous scenario are appropriate. If, however, leaders are confident in the ability of the forces remaining on alert to maintain deterrence they may feel confident in longer regeneration times and lower reconstitution rates. In this case complete electronic shutdown or even major hardware de-alerting might suffice.

Revisiting Status Quo Methodologies

As stated earlier, certain process methodologies are desired by status quo proponents. To review, any de-alerting program in a status quo-type reduction process should strive to maintain *parity*, approach reductions *bilaterally*, seek *verifiability* in the system, and proceed in a *slow*, deliberate manner. Does de-alerting in a status quo-type construct allow this?

The first two of the process methodologies are rather self-determining. A de-alerting program within a broader arms reduction regime would create *parity* and be as *bilateral* as leadership decided. These issues can be controlled to a great extent by the framers of the negotiated agreement. The same can be said of *speed*. Again, since the status quo camp values deliberateness and discourages speed, leaders can simply take that requirement into consideration when negotiating agreement timetables.

Verifiability, on the other hand, is problematic for many de-alerting methods. Virtually all of the methods discussed as possible status quo de-alerting options have significant verifiability problems. As discussed in Chapter 6, all electronic and minor hardware de-alerting actions (the preferred methods in the status quo scenarios discussed above) take place out of sight. In addition, while somewhat easier to verify, even the major hardware de-alerting options would mandate extensive verification mechanisms. This does not mean very robust verification regimes can not be created to electronically or physically monitor systems; it simply means that verification of de-alerting actions would be a significant challenge to overcome.

De-alerting in the Minimalist Camp

To review, the process methodologies for the minimalist camp are significantly less constraining than those of the status quo camp. To minimalists parity is not important because they believe there is a *finite number* that will satisfy the needs of deterrence. Since deterrence is maintained by a finite number and does not depend on the strength of the opponent, *unilateral* and *fast* reductions are then possible. Since, to the minimalist, deterrence is based on the enemy being convinced of your capability and will, the only *verification* necessary is that which convinces your adversary that your force is sufficient.

This section does not address how de-alerting might or might not support a regime *already working* under a minimalist doctrine and force structure. Rather it attempts to answer the question: If the US were to adopt a minimalist stance today (embracing the process methodologies/beliefs in the previous paragraph), can de-alerting contribute to *attaining* a minimalist force structure?

General De-alerting Concepts for the Minimalist Camp

Partial de-alerting would serve the minimalist well in re-shaping force structure to meet his finite end strength. While minimalists feel that stability and deterrence are reinforced by a finite number, drawing forces down *to* that finite number could be destabilizing to the system. As such, a progressive de-alerting system could serve as a way to attenuate the shock experienced in the system.

Specific De-alerting Methods Enroute to a Minimalist System

To attenuate the shock of a fast, unilateral shift to a minimalist paradigm, leaders could use various de-alerting methods. In the earliest stages of the drawdown, leaders would probably want to both display their commitment to the new doctrine and force structure while still hedging against potential instability caused by the shift. Partial de-alerting could provide the mechanism to achieve that aim.

In the early phases of the drawdown, any of the de-alerting methods that allow rapid and reliable reconstitution could serve as the hedge against instability. As illustrated in the previous status quo discussion, two of the electronic de-alerting methods, *manual safing* and *complete electronic shutdown* satisfy these requirements to various degrees as would any of the *minor* mechanical methods as well.[193]

Again much like the earlier discussion in the status quo scenario, these fast, easily reconstitutable de-alerting methods could be replaced with more permanent de-alerting methods. This shift would presumably take place after minimalist leaders are satisfied with the system's stability. These de-alerting methods would consist of those belonging to the *major hardware* category discussed earlier.

Of course, depending on the level of commitment to or faith in minimalist theory, leaders could forego the attenuating, easily reversible de-alerting steps and proceed directly to a more robust *major hardware* de-alerting. In this case it would also be consistent with pure minimalist theory to employ some of the quicker de-alerting measures early in the process since it would take significantly longer to complete a comprehensive major hardware de-alerting program. While this might look similar to the attenuating process above, the difference would be that the pure minimalist would not be using the easily reversible de-alerting processes deliberately to attenuate shock, but as a means to more rapidly pull systems off alert to meet a finite goal. Orderly progression would not be a consideration.

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[193] Remember that the manual safing option is the fastest de-alerting option (less than 72 hours), the complete system shutdown option extends the time required to re-alert in a contingency (to 96 hours) and carries the risk of a possible system loss rate of 10 to 20 percent. The time required to restore fleet-wide launch capability to systems de-alerted using the minor hardware option is approximately 96 hours.

Revisiting Minimalist Methodologies

De-alerting plans similar to the ones described above easily meet the desired process methodologies required by minimalist proponents. Since parity and the need for bilateral movement are of little concern to members of the minimalist camp, either the slower attenuating de-alerting process or the more aggressive major hardware de-alerting programs are adequate. Likewise, neither of the above-mentioned processes is too aggressive for the minimalists as stability lies in the finite number, not the speed (or lack thereof) of the drawdown. And finally verification in this minimalist world should be simpler since the only verification that is mandated is that which satisfies the opponent that the minimalist force is still credible.

The following table summarizes the de-alerting methods most conducive to the status quo and minimalist camps:

Table 2

De-alerting Methods for Status Quo and Minimalist Camps

CAMPS	BEST DE-ALERTING METHODS	COMMENTS
Status Quo		
- Precursor to deactivation	- Manual safing, Power removal, Minor hardware or - Major hardware (could be a phased/progressive approach)	- Allows for rapid re-alerting - If no rapid re-alert necessary or de-activation is imminent
- End in itself	- Manual safing, Power removal, Minor hardware, Major hardware	- Depends on leader confidence in remaining forces and/or need for regeneration speed
Minimalist		
- Attenuating	- Manual safing, Power removal, Minor hardware up to Major hardware	- Progressive, deliberate phasing to increase stability
- Pure minimalist	- Entire spectrum available	- Emphasis on speed of de-alerting, not orderly progression to attenuate shock

Chapter 8

Conclusion

This study's broad conclusions, that alert forces are still necessary for now, that wholesale de-alerting is not advisable at this time, and that partial de-alerting methods could play a limited role within a broader, negotiated arms reduction regime are probably not as important as the specific findings concerning how de-alerting might contribute to future US policy and force structure. Evidence suggests senior US leaders may again soon be searching for new solutions to the nuclear question and partial de-alerting as part of a larger whole, may be able to contribute.

As discussed in Chapters 5 and 7 of this study, the START-type arms reduction process seems to be dying a painfully slow death with little hope for revival. As a result, US political leaders are eagerly searching for new ways to reduce the still-robust strategic nuclear arsenals of the ex-Cold War foes. And as Bob Bell and several legislators have suggested, the current administration and some members of Congress see de-alerting as a possible means to break the current arms reduction log-jam.

The implication of these two realities (stagnated arms reduction process and a political leadership possibly predisposed to nuclear de-alerting solutions) is that military leaders may be asked to recommend or implement solutions that involve partial nuclear de-alerting options, regardless of their personal reservations on the efficacy of wholesale de-alerting. It is here where those of us who do not fully embrace many facets of nuclear de-alerting might be cautioned.

To draw from history, some suggest that post-WWII senior USAF leaders lost their "seat at the table" and ceased to have a voice with senior political leaders on matters of military policy and strategy due to a lack of breadth in their vision and a rigid advocacy of the strategic nuclear solution to all contingencies.[194] Could the same thing happen in the next few years as our political leaders struggle to show movement on the nuclear front? Could USAF leaders, unwilling to entertain nuclear de-alerting even on the fringes of a status quo-type negotiated system lose *their* seat at the table and end up merely

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[194] Michael R. Worden, *Rise of the Fighter Generals: The Problem of Air Force Leadership, 1945-1982* (Maxwell AFB, AL: Air University Press, 1998), 110-111.

implementing others' solutions as opposed to contributing to the decision making process?

This is not to suggest that those who do not embrace wholesale nuclear de-alerting are out of step and are doomed to suffer the same type of intellectual exile arguably faced by USAF leaders in the early 1960s. This simply suggests that leaders must not only be prepared with arguments showing how wholesale de-alerting is wrong, but must also be prepared to show how partial, limited de-alerting could best be used in a broader, negotiated arms control regime if asked to do so.

Hopefully this study will help equip leaders to involve themselves in that crucial debate when the time comes.

Areas for Further Study

Almost without exception, every de-alerting method discussed in this study struggled to satisfy the verification requirement. This author could easily create programs and processes in his mind that satisfied electrical and physical verification demands but in *every* case, the process envisioned was possibly prohibitively intrusive or tremendously large and costly. With the possible exception of Dr. Blair, most of the writings reviewed while conducting this research provided only scant detail on verification means. This is clearly an area in need of greater study.

Additionally, a potentially de-stabilizing situation could be on the horizon if the well-placed sources of General Habiger and Dr. Blair are correct. Both suggest the possibility of significant portions of the Russian strategic nuclear force falling off alert due to a lack of funding for adequate nuclear weapon life extension programs. If, as Dr. Blair suggests, Russian deployed strategic weapons totals could drop into the "hundreds of weapons" in the very near future, then stability could be significantly strained. The implications of such a large, unplanned, and rapid Russian force drawdown merit serious study.[195]

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[195] Blair, Interview.

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